



Tristan Biodiversity Action Plan (2006 – 2010)



Tristan Island Government

in partnership with



**The Royal Society for the
Protection of Birds**



The University of Cape Town

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Tristan da Cunha

Biodiversity Action Plan

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Cover photograph:

Atlantic Yellow-nosed albatross on Nightingale Island with Tristan in the background

All photos by: Paul Tyler, Alison Rothwell, Erica Sommer and James Glass

Foreword

by Lewis Glass
Acting Administrator, Tristan da Cunha

From the moment Tristão d'Acunha first sighted the islands in 1506, Tristan da Cunha has been recognised as a unique place, with an assemblage of wildlife found nowhere else on the globe. Our very way of life on Tristan has always been dependant on the sustainable harvest of the natural resources of the island, and careful management has protected this resource for future generations.

For the first time the Tristan islanders are now fully involved in the conservation of our unique natural heritage, not only for the economy of the islands, but also for the enlightenment and enjoyment of current and future generations. This plan will guide and encourage our efforts to protect our unique islands.

Lewis Glass
Acting Administrator
Tristan da Cunha
October 2005

By Mike Hentley
Administrator, Tristan da Cunha

Residents on Tristan, the world's most isolated island community, well understand the need to live in harmony with nature. Their livelihoods depend on using natural resources wisely, and they take seriously their responsibilities for preserving a healthy environment on Tristan and its neighbouring islands. Five of the six main islands in the group are uninhabited (except for a permanently-manned weather station on Gough Island) and, because of their isolation, contain some of the best-preserved marine and land ecosystems in the cool temperate zone. These islands are globally important for their large populations of seabirds, and are also home to endemic species of land birds and plants.

Although their community is small (currently 275) and the economy fragile, Tristanians have been doing what they can to recognise and to conserve this special heritage. Measures include:

- š Implementation of a sustainable fisheries policy: good management has improved rock lobster stocks fished in local waters and enabled progressive increases in annual catch quotas;
- š Inscription of Gough Island as a World Natural Heritage Site in 1995, extended to Inaccessible Island in 2004. (Some 44% of land area in the Tristan Group is set aside for conservation);
- š A revision of local conservation laws designed to enable Tristan to ratify the international Agreement on Conservation of Albatrosses and Petrels;
- š The appointment in 2005 of a full-time Conservation Officer to supplement the ongoing work of local volunteers;
- š Successful bids in 2004/05 for UK Government funds amounting to more than £200,000 to support local conservation projects, including alien plant eradication and studies of threatened seabird populations.

There is much more to be done, and the Biodiversity Action Plan provides the framework for the priority actions needed over the next five years. I would like to take this opportunity to thank all involved in its preparation, particularly Alison Rothwell and Paul Tyler who conducted extensive periods of fieldwork on the Islands from 2003 to 2005. I would also like to pay tribute to the continuing support provided by Alison's RSPB and Birdlife South Africa colleagues, and to the unstinting help, effort and encouragement provided by Tristan's Honorary Conservation Officers John Cooper and Peter Ryan of the University of Cape Town.

Mike Hentley
Administrator

January 2006

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The Tristan islanders themselves raised many of the issues covered in the plan, and these and other ideas were discussed at a UK workshop organised by the Tristan Darwin Initiative project.

Much of the recent information on the wildlife of Tristan da Cunha was the result of fieldwork carried out by the Darwin Initiative project team: James Glass, Norman Glass, Simon Glass, Trevor Glass, Warren Glass, Jeremy Green, Matthew Green, Rodney Green, Christine Hanel, Ian Laverello, Eugene Repetto, Sue Scott, Frank Swain, Wayne Swain and Paul Tyler.

The following people helped to prepare the plan: Paul Buckley, John Cooper, Richard Cuthbert, Lewis Glass, Christine Haenel, Mike Hentley, Geoff Hilton, Mike Pienkowski, Peter Ryan, Sarah Sanders, Erica Sommer, Robin Wynde, and special thanks are due to Cynthia Green and Iris Green who helped with the project administration.



Tristan Fieldwork Team

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Introduction

Since the 1992 Earth Summit in Rio there has been much talk about biodiversity and the urgent need to conserve it. Tristan da Cunha is one of the world's smallest nations, but its wildlife (including millions of seabirds and many endemic species) represents a significant part of the UK's, and the world's, biodiversity.

Much work has already been carried out in order to protect this wildlife, so this action plan gives an overview of the present status of the biodiversity of Tristan da Cunha, and the actions planned to manage it effectively for the next five years.

The UK Government has ratified the Convention on Biological Diversity on behalf of Tristan da Cunha. The plan will assist in meeting the requirements of this international commitment.

The Government of Tristan da Cunha has signed an Environment Charter agreement with the UK Government, and this has outlined the way forward for the protection of the environment on Tristan. The actions within this plan have been cross-referenced to the commitments to this charter.

The concept of long term planning is relatively new to Tristan da Cunha, and this plan has been produced whilst the Tristan government has been in the process of drawing up an overall government strategy. It has been prepared as part of the Darwin Initiative project 'Empowering the People of Tristan da Cunha to Implement the CBD'. The development of the plan must be unique in that the entire population of Tristan was aware of the project. Every family on the island has had the opportunity to be involved.

Initial consultations with the government and people of Tristan da Cunha were carried out from September 2003 to March 2004 to establish the conservation priorities. A workshop held in the UK in July 2004 was attended by UK stakeholders, and the outcomes of this workshop and the earlier consultations have been used to define both the conservation objectives and potential UK partners for taking the actions forward. The action plan has been divided into sections based on the objectives identified at this workshop, which have subsequently been endorsed by the Government of Tristan da Cunha.

Much is yet to be discovered about the wildlife of Tristan da Cunha, and so one of the key recommendations is to survey those taxa where data are lacking. For other species where there are reasonable baseline data, monitoring programmes will be put in place where possible, to allow changes in status to be detected.

The most significant threat to the biodiversity of Tristan da Cunha comes from the introduction of invasive alien species. The priority for the next five years will be to concentrate on eradication of those alien species that pose the severest threat to the native wildlife and to put in place measures to prevent further introductions.

There are significant threats to many of the species that breed on and around Tristan da Cunha caused by activities beyond Tristan and its territorial waters, and although they are mentioned here, the scope of this plan is to cover only actions that are on Tristan da Cunha itself, within the Exclusive Economic Zone (EEZ) or at the ports that serve Tristan. Although some progress has been made on understanding the marine environment around Tristan, there is still very little information and knowledge.

This is a five year plan – it is envisaged that most of the actions in the plan will be carried out, or at least work started, between 2006 and 2010. It will not be possible for the Tristan Island Government or its citizens alone to implement all the actions set out in the plan and some external assistance will be required.

Management plans have already been published for Gough and Inaccessible, and a management plan for Nightingale is in the process of preparation. This plan forms an ‘umbrella’ for all of these plans, and to a large extent is the Tristan management plan. Hence many of the actions are focussed on the main island of Tristan – actions specific to the other three main islands are within the existing management plans.

Overall progress on the plan will be reviewed annually, in the form of a report from the Natural Resources Department. This report will be circulated to the Tristan Island Council and to stakeholders in the UK.

Although perhaps beyond the duration of this plan, we will know whether implementation has been successful if there is a decrease in the number and range of invasive alien species and an accompanying increase in the numbers of native invertebrates and birds and the range of native plants.

Tristan is economically dependant on the sustainable harvesting of its wildlife, so the conservation of the biodiversity of Tristan is of fundamental importance for maintaining the community on Tristan. In addition, there is potential to diversify the island’s economy to include wildlife tourism, so the long-term protection of the wildlife of the Tristan islands is a high priority for the Tristan community.

Vision

The vision is to enable the people of Tristan da Cunha, in partnership with organisations from around the world, specifically the UK and South Africa, to conserve their globally important and unique biodiversity for the benefit of current and future generations.



View of the Centre Lake from the Peak

Action plan for the Conservation of Biodiversity in Tristan da Cunha

Overall Goal

Although beyond the duration and scope of the plan, the overall goal is to conserve the native biological diversity of Tristan da Cunha so that the people of Tristan da Cunha can continue to benefit from it. This will be achieved by halting, or, in the case of some species, reversing, the rate of biodiversity decline on Tristan da Cunha.

The purpose of this plan is to enable the people of Tristan da Cunha to actively contribute to the conservation of and benefit from the biodiversity on their islands.

Objectives

1. Conservation is integrated into all Government programmes, policies and plans (nationally and internationally)
2. Support for biodiversity conservation is strengthened on Tristan
3. Tristanians have the capacity to effectively manage biodiversity
4. The impact of invasive alien species is reduced or eliminated
5. The sustainable use and management of the marine environment is enhanced
6. The knowledge of Tristan's key habitats and species is increased

The next section highlights the main activities under each objective. There is an activity table included at the end of the section, which indicates the timeframe and responsibility.

1. Conservation is integrated into all Government programmes, policies and plans (nationally and internationally)



Fishing Boats waiting for a 'day' at Calshott Harbour

The economy of the territory is, at present, almost completely dependant on the sustainable harvesting of wildlife, and so the conservation of the biodiversity of Tristan is of fundamental importance to the protection of livelihoods on the island. There is potential to diversify the economy to include wildlife tourism, which would be limited by necessity, but which could raise revenue for the island.

1.1 The long term sustainable economic plan will ensure that benefits and potential benefits from economic activities other than fishing (in particular, wildlife tourism, handicrafts) are fully realised (Environment Charter Commitments 1, 3)

Actions:

- 1.1.1 The Conservation Officer, in conjunction with the Head of the Natural Resources Department, will ensure high priority is put on conservation and the potential benefits to Tristan da Cunha, in particular through discussion at Tristan Island Council meetings.
- 1.1.2 The Tristan Island Council will make contact with cruise ship operators to actively encourage tourism on Tristan.

1.2 Tristan will seek sustained and coordinated UK government attention to Tristan conservation issues

Actions:

- 1.2.1 The Tristan government will develop closer working relationships on conservation and related issues with relevant FCO departments, other relevant UK government departments (DFID in particular) and other UK Overseas Territories government departments, particularly those territories in the South Atlantic.

1.3 Raise awareness and profile of the importance of Tristan's biodiversity amongst wider decision-making community in the UK

Actions:

- 1.3.1 Information about biodiversity issues on Tristan will be communicated to a wider network in the UK and beyond through the Tristan da Cunha and other websites
- 1.3.2 Employees and representatives of the Tristan government will maximise the opportunities given by temporary residence in the UK to develop links with UK agencies.
- 1.3.3 Funding will be sought to establish a representative of the Tristan Government in London, to represent Tristan's interests to the UK government and agencies.

1.4 Legislation and policies will be put in place to ensure that future economic development does not impact negatively on biodiversity (Environment Charter Commitment 4)

Actions:

- 1.4.1 Policies will be produced that require infrastructure/development projects to undergo environment impact assessments.
- 1.4.2 The proposed construction of a new harbour will undergo an environment impact assessment, in particular to mitigate the potential introduction of invasive species.

2. Support for biodiversity conservation is strengthened on Tristan



Northern rockhopper penguins below the huts on Nightingale Island

The Darwin Initiative project has begun to raise awareness of conservation issues amongst the Tristan population, but this process needs to be continued. Tristanians are now directly involved in conservation projects, and this has helped raise awareness of the importance of their natural heritage.

2.1 Tristanians are better aware of the importance of the biodiversity of the islands (Environment Charter Commitments 9, 10)

Actions:

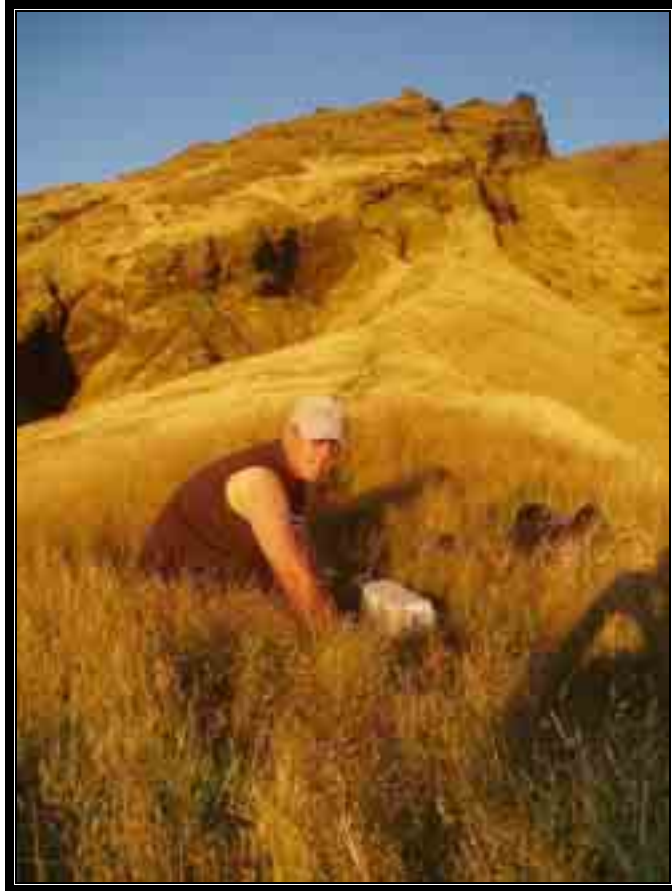
- 2.1.1 Educational materials about the biodiversity of Tristan and its global/local importance will be used in the school and kept updated.
- 2.1.2 The school curriculum will be developed to include environmental education.
- 2.1.3 A booklet produced by the Darwin Initiative project on the wildlife of the island and its global significance will be disseminated throughout the community.
- 2.1.4 Copies of papers and articles about wildlife on Tristan will be announced and available on the island.
- 2.1.5 Where possible, the school will be encouraged to take an active role in conservation.
- 2.1.6 The islands museum will be expanded to include an account of the natural history of Tristan da Cunha.

2.2 Islanders given adequate feedback on research on and about Tristan (Environment Charter Commitment 10)

Actions:

- 2.2.1 The Conservation Officer will produce an annual newsletter detailing the conservation work that has been carried out and an analysis of the results of that work.
- 2.2.2 The Natural Resources Department will keep the island population informed about conservation projects through reports to the council and open public meetings.
- 2.2.3 Visiting scientists will be encouraged to give presentations about their work to the community.
- 2.2.4 Presentations on conservation in Tristan will be given to all visiting tourist vessels if requested.

3. Tristanians have the capacity to manage biodiversity effectively



Rodney Green setting rodent trap on West Castle

Current legislation is being updated to take into account international agreements. However, there is a need to increase awareness of conservation legislation on Tristan

The Dawin Initiative project has enabled training to be given to the conservation team on Tristan. Ten Tristan government employees have attended training for conservation management, and the Head of Natural Resources Department has attended project management training in the UK.

A database has been established to store biodiversity data on key species. However, the human and financial capacity to take forward conservation work is limited so some external specialist knowledge and resources will be required.

At present external communication from Tristan is poor, and this has hindered the development and overall management of several key projects. The installation of direct email in the Natural Resources Department has begun to address this problem, but improved access to the internet and better phone and email facilities for all government departments would help in the development of projects.

3.1 Adequate conservation legislation to protect species and habitats is introduced, and this legislation is enforced (Environment Charter Commitments 2, 6)

Actions:

- 3.1.1 Greater emphasis will be given on Tristan to the effective enforcement of conservation legislation.
- 3.1.2 Biodiversity protection legislation will be assessed and upgraded where necessary to comply with international obligations.
- 3.1.3 Programmes will be introduced to monitor harvest of Great shearwaters and Northern rockhopper penguin eggs on Nightingale and Alex islands.

3.2 Ensure that the protected sites of the Tristan da Cunha group are maintained at optimal conservation status (Environment Charter Commitments 2, 6, 7)

Actions:

- 3.2.1 An advisory committee will be established to oversee the management of all the Protected Areas within the Tristan Group, with representatives from partner organisations in UK, South Africa and Tristan.
- 3.2.2 Management plans for Inaccessible and Gough are updated and implemented.
- 3.2.3 A management plan for Nightingale is finalised and implemented.
- 3.2.4 Access is regulated to Protected Areas by the Conservation department.
- 3.2.5 Measures will be put in place to eliminate the risk of introducing alien species to protected sites.
- 3.2.6 Further human-induced habitat loss is prevented – in particular fire prevention measures are put in place on Nightingale and Inaccessible.

3.3 Strengthen technical skills to effectively manage biodiversity (Environment Charter Commitment 1)

Actions:

- 3.3.1 Continue with training for selected Tristan government employees who will assist the conservation officer.
- 3.3.2 The Natural Resources Department will seek help to propose and manage biodiversity projects from UK and other external agencies and individuals.
- 3.3.3 Links will be developed with UK agencies in order to gain funding and progress proposed conservation projects.
- 3.3.4 Visiting scientists will be provided with training on Tristan culture.

3.4 Improve external communications and access to this communication (Environment Charter Commitment 1)

Actions:

- 3.4.1 Improvements to the satellite link to Tristan will be sought to link all government departments to the email system and allow direct emails to all heads of departments.
- 3.4.2 The Natural Resources Department email link will be used to keep stakeholders in the UK and South Africa informed of conservation issues on Tristan.

4. The impact of alien species is reduced or eliminated



The Removal of Flax from Nightingale

The greatest threat to the wildlife of Tristan da Cunha is from the introduction of alien species, both plant and animal. Many alien species that have already established on Tristan were plants brought in deliberately to improve pasture and for building purposes, and many more have been accidentally introduced with imported foodstuffs.

At present the only agricultural activity is on the main island of Tristan. In the past there has been livestock and crops on all four main islands, but this is now limited to Tristan, although the affects of agriculture in terms of introduced species are also seen on Nightingale, Gough and Inaccessible. Much of the total area of the main island of Tristan is used for agriculture in one form or another. The coastal plains are used for growing potatoes and other food crops, and cattle and sheep are also grazed there. These areas are separated from the mountainous areas of Tristan by steep cliffs, with fencing in some places, and these areas are used only for the grazing of sheep. Physical constraints such as steep, rocky ground, and dense phylica trees, in addition to force of habit, mean that the areas subjected to sheep grazing are mainly the northern and western parts of the mountain.

The development of agriculture on Tristan da Cunha has led to some significant changes to areas of natural habitat on the main island of Tristan. The first major change was the loss of coastal tussock grass, but more recently alien species have been introduced as a result of agricultural activity, and these are now spreading and affecting native habitats and possibly breeding birds. The spread of alien species is exacerbated by the presence of grazing animals, although the extent of the problem has not yet been quantified.

The most significant introduction has been the arrival of rodents on Tristan and Gough, which severely depleted burrowing petrel populations on Tristan, and continues to threaten the survival of several seabird and landbird populations on both islands, including three endemic species.

4.1 Reduce the number of alien species introduced to Tristan (Environment Charter Commitment 2,3,4)

Actions:

- 4.1.1 Work with the South African authorities to improve arrangements for checking and transporting cargo in Cape Town.
- 4.1.2 Increase the amount of fruit and vegetables grown on the island to reduce the amount imported from South Africa. Investigate organic methods of increasing yield (for instance crop rotation).
- 4.1.3 Seek advice from UK, other UKOTs and other agencies operating on small islands on the best methods for achieving environmentally sustainable farming.
- 4.1.4 Funding will be sought to ensure that the fruit and vegetables that are imported will be irradiated either at the place of origin or on Tristan.
- 4.1.5 Use species which improve grazing sward but which do not result in a loss of biodiversity.
- 4.1.6 The pasture on the coastal plain will be improved through the application of fertiliser to eliminate the need to import fodder.
- 4.1.7 Alternative fodder (pellets) will be imported to reduce the risk of invasive species introductions.
- 4.1.8 A quarantine area will be established for dealing with alien species when they arrive at Tristan.
- 4.1.9 All cargo will be checked by the Agriculture Officer.

4.2 Ensure casual/adventive alien plants are not able to establish populations in the wild (Environment Charter Commitment 2)

Actions:

- 4.2.1 Careful monitoring carried out so that alien plants are quickly recognised and are not allowed to establish populations.
- 4.2.2 Contingency supplies of herbicide kept to eradicate quickly any new alien species
- 4.2.3 Training will be given to the Agriculture Department for identification of alien plant species and application of pesticides
- 4.2.4 A booklet with details of alien plant species found on Tristan will be produced

4.3 Prevent the transfer of alien species between islands of the Tristan group (Environment Charter Commitment 2)

Actions:

- 4.3.1 The recommendations of the Inaccessible and Gough management plans to prevent the introduction of alien species will be enforced.
- 4.3.2 Poison bait stations will be placed on the coasts of Inaccessible and Nightingale to prevent the accidental introduction of rats.
- 4.3.3 All sand taken from Tristan to other islands will be steam treated.
- 4.3.4 Boots and clothing will be cleaned before travelling between the Tristan Islands.
- 4.3.5 Monitoring of spread of alien species will be carried out so that any accidental transfers between islands are quickly recorded and action taken to prevent spreading.
- 4.3.6 All vessels visiting islands in the Tristan group will be required to register with the Natural Resources Department and present certificates to show they are rodent free.

4.4 Programme of control or removal of alien plants introduced (Environment Charter Commitment 2)

Actions:

- 4.4.1 Control and possible eradication methods for the invasive alien species already established on Tristan da Cunha will be investigated.
- 4.4.2 In particular, *Sagina* will be eliminated from Gough, and methods for halting the spread of the species on Tristan will be examined.
- 4.4.3 Alien plants recently introduced accidentally to Inaccessible island will be removed.
- 4.4.4 Nightingale and Inaccessible islands will be closely monitored to ensure that the flax removal programmes were successful and the species is not allowed to re-establish.
- 4.4.5 Effect of alien plants on native species will be investigated, so that resources will be prioritised to the control of those alien species that pose the most threat to the native wildlife.
- 4.4.6 A database will be established, listing alien plants and their distribution, and herbicides that can be used for control/eradication.

4.5 Introduced rodents are controlled or eradicated on Tristan and Gough (Environment Charter Commitment 2)

Action:

- 4.5.1 A feasibility study will be carried out to look at the control or eradication of house mice from Gough and rats and mice from Tristan.
- 4.5.2 Funding will be sought to carry out the recommendations of this study.
- 4.5.3 Awareness will be raised on Tristan of the danger of accidental introduction of rats to Nightingale or Inaccessible.
- 4.5.4 Measures will be put in place to prevent further introductions of rodents both in cargo from South Africa and by transfer between islands.
- 4.5.5 Contingency plans will be drawn up in case of accidental introduction to Nightingale or Inaccessible.
- 4.5.6 Alternative food sources for rodents will be removed through improved waste management (storage and collection of waste).
- 4.5.7 An improved rat control programme is introduced on the settlement.

**4.6 Restoration of affected species and ecosystems following removal of alien species
(Environment Charter Commitment 2)**

4.6.1 The possibility of reintroducing the Tristan albatross and Tristan bunting if a rodent eradication takes place will be explored.

5. The sustainable use and management of the marine environment is enhanced



Marine Life – Five Fingers

The economy of Tristan depends almost entirely on the fishing industry, and in particular the Tristan lobster fishery. Opportunities to increase the income from fisheries will be investigated, whilst ensuring that the use of marine resources is sustainable and that there is no threat to the marine ecosystem. Relatively little survey work has been carried out on the marine life of Tristan da Cunha, despite its obvious importance to the islanders. The local fisheries rely on a healthy marine ecology, about which very little is known.

The marine life of the Tristan group is also very interesting from a scientific and biodiversity standpoint. There is no other warm temperate island group as remote and isolated as Tristan, and the arrival of new species has been a rare event – diversity is extremely low compared to mainland coasts in the same temperature range. As on land, species arriving here have subsequently evolved in isolation, so that a large proportion of them are apparently endemic. This makes the islands important for conservation of biodiversity, and vulnerable to the further accidental introduction of foreign species and pathogens.

One of the main threats to the marine environment of the Tristan EEZ is unregulated fishing, and the government will work towards regulating the legal fishing industry to ensure its sustainability, and will try to eliminate illegal fishing.

5.1 Ensure the legal fishery is sustainable (Environment Charter Commitments 1, 3, 7)

Actions:

- 5.1.1 Seek advice on fisheries management from other South Atlantic Overseas Territories, South Africa and the UK.
- 5.1.2 Enhance the monitoring of fish stocks in order to provide better data to inform quota levels.
- 5.1.3 Undertake research on the biology of the Tristan lobster in order to assist the sustainable management of the stock.
- 5.1.4 Seek advice on quotas from more than one source.

5.2 Minimise the impact of the legal fishery on the marine environment (Environment Charter Commitments 2, 6,)

Actions:

- 5.2.1 Ensure all long-liners carry a Natural Resources Department fishery observer on board to verify compliance with licence conditions and to ensure that mitigation measures are used.
- 5.2.2 Ensure fishing licences include a condition that mitigation measures are employed to minimize by-catch of non-target species and seabirds.
- 5.2.3 Data on bird bycatch will be collected and analysed annually, and made available through the Tristan da Cunha website.

5.3 Minimise illegal fishing in the Tristan EEZ (Environment Charter Commitments 2, 6, 8)

Actions:

- 5.3.1 Regular patrol assistance from licensed fishing boats, research vessels and naval vessels will be requested.
- 5.3.2 The means of setting up a system for monitoring fishing vessels in the Tristan EEZ will be investigated. This may include use of a long range patrol vessel, and surveillance by remotely operated radar installed on either Nightingale or Inaccessible island.
- 5.3.3 The feasibility of monitoring vessels by satellite will be investigated.
- 5.3.4 The scale of the problem will be determined by monitoring reports of landings of Tristan crayfish at foreign ports.
- 5.3.5 Engage with regional and international fisheries organisations (International Commission for the Conservation of Atlantic Tuna, South East Atlantic Fisheries Organisation).

5.4 Maintain marine biodiversity of Tristan at its current level (Environment Charter Commitments 2, 7, 10)

Actions:

- 5.4.1 Identify the existing collections of preserved animals and seaweeds.
- 5.4.2 Collect and collate published information from previous surveys on the marine ecosystems and identify further work required to establish a baseline of information on marine life.
- 5.4.3 Assess the risk of the introduction of alien marine species (ballast water, ships' hulls, holding tanks for crayfish) and identify likely pathways for alien introductions.
- 5.4.4 Identify the potential impact of introduced species on the native marine life particularly economically important species, and introduce mitigation measures to minimise the likelihood of such introductions occurring.

6. The knowledge of Tristan's key habitats and species is increased



Male Subantarctic fur seal

So much is yet to be discovered about the wildlife of Tristan da Cunha. There are few data on key taxa and little is known about the interaction between key species and the habitats in which they live.

6.1 Ensure the current distribution of native habitats is maintained (Environment Charter Commitments 2, 7)

Actions:

- 6.1.1 Monitor habitat distributions on Tristan and Nightingale every five years, as per the monitoring manual (Annex 9).
- 6.1.2 Carry out a study to assess the impact of alien species on native plants and habitats on Tristan and Nightingale.

6.2 Provide baseline information on endemic plant species (Environment Charter Commitments 2, 7)

Actions:

- 6.2.1 Continue with the survey work to establish baseline data on the range of the endemic plants.
- 6.2.2 Monitor the range of endemic plants on a five yearly basis.

6.3 Provide baseline information on invertebrates on Tristan, Nightingale and Gough (Environment Charter Commitments 2, 7)

Actions:

- 6.3.1 Continue with the present work to identify invertebrates collected on Tristan and Nightingale.
- 6.3.2 Carry out invertebrate collection on Inaccessible.

6.4 Ensure breeding bird populations are stable (Environment Charter Commitments 2, 7)

Actions:

- 6.4.1 Monitor populations of the target species and annual harvesting of seabird chicks and eggs to ensure that it is sustainable.
- 6.4.2 Carry out annual monitoring of Northern rockhopper penguins and Atlantic yellow-nosed albatross on Nightingale and Tristan as per the monitoring manual (Annex 9).
- 6.4.3 Monitoring protocols will be put in place for breeding land birds.
- 6.4.4 Seal numbers on Tristan will be counted annually (Annex 9).
- 6.4.5 Investigate the impact of seals on breeding sea birds.

Activities Plan

The Head of the Tristan Natural Resources Department will be responsible for overseeing the implementation of the plan on Tristan. Many of the actions will be carried out by the Tristan da Cunha Conservation Officer, aided by other Tristan government staff.

As there are a range of departments involved in implementation the activities table below outlines the activities, timeline and departments/persons responsible for taking forward.

	Action	Timescale	Responsibility
1.	Conservation is integrated into all Government programmes, policies and plans		
1.1	The longterm sustainable economic plan will ensure that benefits and potential benefits from economic activities other than fishing are fully realised		
1.1.1	The Conservation Officer attends Island Council meetings on conservation issues	Ongoing	Conservation Officer
1.1.2	Contact is made with cruise ship operators	Ongoing	Administrator & Tristan Tourist Board
1.2	Tristan will seek sustained and coordinated UK government attention to Tristan Conservation issues		
1.2.1	Strengthen relationships with UK Govt. departments	Ongoing	Tristan Island Council, Conservation Officer, UKOTCF/SAWG, Administrator
1.3	Raise awareness and profile of the importance of Tristan's biodiversity amongst wider decision-making community in the UK		
1.3.1	Information about biodiversity will be communicated through the Tristan da Cunha and other websites	Ongoing	Tristan da Cunha Association, RSPB, Conservation Officer
1.3.2	Tristanians will maximise the opportunities given by temporary residence in the UK to develop links with UK agencies	Ongoing	Tristan Island Council
1.3.3	Funding will be sought to establish a representative of the Tristan Govt. in London	Ongoing	Tristan Island Council, Administrator
1.4	Legislation and policies will be put in place to ensure that future economic development does not impact negatively on biodiversity		
1.4.1	Policies will be produced that require infrastructure/development projects to undergo environment impact assessments	Ongoing	Tristan Island Council, Administrator
1.4.2	The proposed construction of a new harbour will undergo an environment impact assessment	2007	Tristan Island Council, Administrator
2.	Support for biodiversity conservation is strengthened on Tristan		
2.1	Tristanians are better aware of the importance of the biodiversity of the islands		
2.1.1	Educational materials about biodiversity will be used and kept updated	Ongoing	Conservation Officer, Head of School
2.1.2	School curriculum will be developed to include environmental education	July 2006	Conservation Officer, Head of School, RSPB
2.1.3	A guide on the wildlife to Tristan will be distributed widely on the island	March 2007	RSPB, UCT, Conservation Officer
2.1.4	Copies of papers and articles about wildlife on Tristan will be announced and available on the island	Ongoing	Conservation Officer
2.1.5	School will be encouraged to take an active role in conservation activities	1 fieldtrip/year	Conservation Officer, School, Education Department
2.1.6	Islands museum will be expanded to include an account of the natural history of Tristan	Ongoing	Administration, Conservation Officer
2.2	Islanders are given adequate feedback on research on and about Tristan		
2.2.1	An annual newsletter will be produced detailing conservation activities	1/year - June	Conservation Officer
2.2.2	Island will be kept informed about conservation projects	Ongoing	Natural Resources Department, Conservation Officer

2.2.3	Visiting scientists will be encouraged to give presentations of their work	Ongoing	Conservation Officer
2.2.4	Presentations on conservation in Tristan will be given to all visiting vessels if requested	Ongoing	Conservation Officer
3	Tristanians have the capacity to manage biodiversity effectively		
3.1	Adequate conservation legislation to protect species and habitats is introduced, and this legislation is enforced		
3.1.1	Greater emphasis will be given on Tristan to the enforcement of legislation	Ongoing	Police, Conservation Officer
3.1.2	Biodiversity legislation will be assessed and upgraded where necessary to comply with international obligations	Ongoing	Tristan Island Council, External support
3.1.3	Programmes will be introduced to monitor harvest of Great shearwaters and penguin eggs on Nightingale and Alex	Ongoing	Natural Resources Department
3.2	Ensure that the protected sites of the Tristan da Cunha group are maintained at optimal conservation status		
3.2.1	An advisory committee will be established to oversee the management of all the Protected Areas within the Tristan Group, with representatives from partner organisations in UK, South Africa and Tristan	December 2006	RSPB
3.2.2	Management plans for Inaccessible and Gough are updated and implemented	Gough - December 2006	Honorary Conservation Officers, Natural Resources Department, Conservation Officer
3.2.3	A management plan for Nightingale is finalised and implemented.	March 2007	Natural Resources Department, Conservation Officer
3.2.4	Access is regulated to Protected Areas by the Natural Resources department	Ongoing	Natural Resources Department, Police
3.2.5	Measures will be put in place to eliminate the risk of introducing alien species to protected sites	Ongoing	Conservation Officer, Natural Resources Department
3.2.6	Further human-induced habitat loss is prevented - in particular fire prevention measures are put in place on Nightingale and Inaccessible	Ongoing	Natural Resources Department
3.3	Strengthen technical skills to effectively manage biodiversity		
3.3.1	Continue with training for selected Tristan government employees who will assist the conservation officer	Ongoing	Conservation Officer, Natural Resources Department, Darwin team
3.3.2	The Natural Resources Department will seek help to propose and manage biodiversity projects from UK and other external agencies and individuals	Ongoing	Natural Resources Department
3.3.3	Links will be developed with UK agencies in order to gain funding and progress proposed conservation projects	Ongoing	Natural Resources Department
3.3.4	Visiting scientists will be provided with training on Tristan culture	Ongoing	Conservation Officer
3.4	Improve external communications and access to this communication		
3.4.1	Improvements to the satellite link to Tristan will be sought to link all government departments to the email system and allow direct emails to all heads of departments	Ongoing	Administrator
3.4.2	The Natural Resources Department email link will be used to keep stakeholders in the UK and South Africa informed on conservation issues in Tristan	Ongoing	Natural Resources Department & Conservation Officer
4	The impact of alien species is reduced or eliminated		
4.1	Reduced the number of alien species introduced to Tristan		
4.1.1	Work with the South African authorities to improve arrangements for checking and transporting cargo in Cape Town	Ongoing	Natural Resources Department, Tristan Island Council

4.1.2	Increase the amount of fruit and vegetables grown on the island to reduce the amount imported from South Africa. Investigate organic methods of increasing yield (for instance crop rotation)	Ongoing	Agriculture Department
4.1.3	Seek advice from UK, other UKOTs and other agencies operating on small islands on the best methods for achieving environmentally sustainable farming	Ongoing	Agriculture Department
4.1.4	Funding will be sought to ensure that the fruit and vegetables that are imported will be irradiated either at the place of origin or on Tristan	Ongoing	Agriculture Department
4.1.5	Use species which improve grazing sward but which do not result in a loss of biodiversity	Ongoing	Agriculture Department
4.1.6	The pasture on the coastal plain will be improved through the application of fertiliser to eliminate the need to import fodder	Ongoing	Agriculture Department
4.1.7	Alternative fodder (pellets) will be imported to reduce the risk of invasive species introductions	Ongoing	Agriculture Department
4.1.8	A quarantine area will be established for dealing with alien species when they arrive at Tristan	Ongoing	Police, Agriculture Department
4.1.9	All cargo will be checked by the Agriculture Officer	Ongoing	Agriculture Department
4.2	Ensure casual/adventive alien plants are not able to establish populations in the wild		
4.2.1	Careful monitoring carried out so that alien plants are quickly recognised and are not allowed to establish populations	Ongoing	Conservation Officer, Agriculture Department
4.2.2	Contingency supplies of herbicide kept to eradicate quickly any new alien species	Ongoing	Agriculture Department
4.2.3	Training will be given to the Agriculture Department for identification of alien plant species and application of pesticides	2007	Need to identify external expertise
4.2.4	A booklet with details of alien plant species found on Tristan will be produced	2008	Need to identify external expertise
4.3	Prevent the transfer of alien species between islands of the Tristan group		
4.3.1	The recommendations of the Inaccessible and Gough management plans to prevent the introduction of alien species will be enforced	Ongoing	Police, Conservation Officer
4.3.2	Poison bait stations will be placed on the coasts of Inaccessible and Nightingale to prevent the accidental introduction of rats	Twice/year	Conservation Officer
4.3.3	All sand taken from Tristan to other islands will be steam treated	Ongoing	Conservation Officer, Natural Resources Department, Public Works
4.3.4	Boots and clothing will be cleaned before travelling between the Tristan Islands	Ongoing	Conservation Officer
4.3.5	Monitoring of spread of alien species will be carried out so that any accidental transfers between islands are quickly recorded and action taken to prevent spreading	Ongoing	Conservation Officer
4.3.6	All vessels visiting islands in the Tristan group will be required to register with the Natural Resources Department and certify they are rodent free	Ongoing	Natural Resources Department, Police
4.4	Programme of control or removal of alien plants introduced		
4.4.1	Control and possible eradication methods for the invasive alien species already established in Tristan da Cunha will be investigated	Ongoing	Tristan Biodiversity Advisory Committee

4.4.2	In particular, <i>Sagina</i> will be eliminated from Gough, and methods for halting the spread of the species on Tristan will be examined	Ongoing	Conservation Officer, UCT
4.4.3	Alien plants recently introduced accidentally to Inaccessible island will be removed	Ongoing	Conservation Officer, UCT
4.4.4	Nightingale and Inaccessible islands will be closely monitored to ensure that the flax removal programmes were successful and the species is not allowed to re-establish	Ongoing	Conservation Officer
4.4.5	Effect of alien plants on native species will be investigated, so that resources will be prioritised to the control of those alien species that pose the most threat to the native wildlife	Ongoing	Conservation Officer
4.4.6	A database will be established, listing alien plants and their distribution, and herbicides that can be used for control/eradication	Ongoing	Conservation Officer
4.5	Introduced rodents are controlled or eradicated on Tristan and Gough		
4.5.1	A feasibility study will be carried out to look at the control or eradication of house mice from Gough and rats from Tristan	Completed by March 2007	RSPB
4.5.2	Funding will be sought to carry out the recommendations of this study	Ongoing	Tristan Biodiversity Advisory Committee
4.5.3	Awareness will be raised on Tristan of the danger of accidental introduction of rats to Nightingale or Inaccessible	Ongoing	Conservation Officer
4.5.3	Measures will be put in place to prevent further introductions of rodents both in cargo from South Africa and by transfer between islands	Ongoing	Tristan Island Council, Administrator
4.5.5	Contingency plans will be drawn up in case of accidental introduction to Nightingale or Inaccessible	2007	Conservation Officer
4.5.6	Alternative food sources for rodents will be removed through improved waste management (storage and collection of waste)	2008	Public Works Department
4.5.7	An improved rat control programme is introduced on the settlement	2007	Agriculture Department
4.6	Restoration of affected species and ecosystems following removal of alien species		
4.6.1	The possibility of reintroducing the Tristan albatross and Tristan bunting to Tristan if a rodent eradication takes place will be explored	Ongoing	Tristan Biodiversity Advisory Committee
5	The sustainable use and management of the marine environment is enhanced		
5.1	Ensure legal fishery is sustainable		
5.1.1	Seek advice on fisheries management from other South Atlantic Overseas Territories, South Africa and the UK	Ongoing	Natural Resources Department
5.1.2	Enhance the monitoring of fish stocks in order to provide better data to inform quota levels	Ongoing	Natural Resources Department
5.1.3	Undertake research on the biology of the Tristan lobster in order to assist the sustainable management of the stock	Ongoing	Natural Resources Department, Marine Coastal Management, Stellenbosch University
5.1.4	Seek advice on quotas from more than one source	Ongoing	Natural Resources Department
5.2	Minimise the impact of the legal fishery on the marine environment		
5.2.1	Encourage all long-liners to carry a Natural Resources Department fishery observer on board to verify compliance with licence conditions and to ensure that mitigation measures are used	Ongoing	Natural Resources Department
5.2.2	Ensure fishing licences include a condition that mitigation measures are employed to minimize by-catch of non-target species and seabirds	Ongoing	Natural Resources Department

5.2.3	Data on bird bycatch will be collected and analysed annually	Ongoing	Natural Resources Department, UCT, RSPB, BirdLife Global Seabird Programme
5.3	Minimise illegal fishing in the Tristan EEZ		
5.3.1	Regular patrol assistance from licensed fishing boats, research vessels and naval vessels will be requested	Ongoing	UK Government, Natural Resources Department
5.3.2	The means of setting up a system for monitoring fishing vessels in the Tristan EEZ will be investigated. This may include use of a long range patrol vessel, and surveillance by remotely operated radar installed on either Nightingale or Inaccessible island	Ongoing	UK Government, Natural Resources Department
5.3.3	The feasibility of monitoring vessels by satellite will be investigated	Ongoing	UK Government
5.3.4	The scale of the problem will be determined by monitoring reports of landings of Tristan crayfish at foreign ports	Ongoing	UK Government, Ovenstones (South Africa)
5.3.5	Engage with regional and international fisheries organisations (International Commission for the Conservation of Atlantic Tuna, South East Atlantic Fisheries Organisation)	Ongoing	UK Government
5.4	Maintain marine biodiversity of Tristan at its current level		
5.4.1	Identify the existing collections of preserved animals and seaweeds	Ongoing	University of Grahamstown, Sue Scott
5.4.2	Collect and collate published information from previous surveys on the marine ecosystems and identify further work required to establish a baseline of information on marine life	March 2008 (Darwin dependent)	Natural Resources Department, RSPB, Sue Scott
5.4.3	Assess the risk of the introduction of alien marine species and identify likely pathways for alien introductions	Ongoing	Natural Resources Department
5.4.4	Identify the potential impact of introduced species on the native marine life particularly economically important species, and introduce mitigation measures to minimise the likelihood of such introductions occurring	Ongoing	Natural Resources Department
6	The knowledge of Tristan's key habitats and species is increased		
6.1	Ensure the current distribution of native habitats is maintained		
6.1.1	Monitor habitat distributions on Tristan and Nightingale every five years, as per the monitoring manual (Annex 10)	Ongoing	Conservation Officer
6.1.2	Carry out a study to assess the impact of alien species on native plants and habitats on Tristan and Nightingale	Ongoing	Conservation Officer, Tristan Biodiversity Advisory Group
6.2	Provide baseline information on endemic plant species		
6.2.1	Continue with the survey work to establish baseline data on the range of the endemic plants	Ongoing	Conservation Officer
6.2.2	Monitor the range of endemic plants on a five – year basis	Ongoing	Conservation Officer
6.3	Provide baseline information on invertebrates on Tristan, Nightingale and Gough		
6.3.1	Continue with the present work to identify invertebrates collected on Tristan and Nightingale	Ongoing	Conservation Officer, Christine Haenel
6.3.2	Carry out invertebrate collection on Inaccessible	Funding dependent	Conservation Officer
6.4	Ensure breeding bird populations are stable		
6.4.1	Monitor populations of the target species and annual harvesting of seabird chicks and eggs	Ongoing	Conservation Officer

6.4.2	Carry out annual monitoring of Northern rockhopper penguins and Atlantic yellow-nosed albatross on Nightingale and Tristan as per the monitoring manual	Ongoing	Conservation Officer
6.4.3	Monitoring protocols will be put in place for breeding land birds	2007	Conservation Officer, RSPB
6.4.4	Seal numbers on Tristan and Nightingale will be counted annually	Ongoing	Conservation Officer
6.4.5	Investigate the impact of seals on breeding sea birds	Funding dependent	Conservation Officer

Monitoring Progress

The Head of the Tristan Natural Resources Department will be responsible for monitoring progress of plan implementation.

An annual report on the progress of the plan will be submitted to the Tristan Island Council by 1 May each year, which will report against activities.

At the end of 5 years (2010), the action plan will need to be reviewed. Table 1 outlines indicators to monitor progress in implementing the plan at the end of 5 years.

Table 1: Tristan Biodiversity Action Plan Indicators

<i>Goal</i>	<i>Description and justification</i>	<i>Indicators</i>
To halt, or in the case of some species and habitats, reverse the rate of biodiversity decline on Tristan da Cunha	Tristan is one of the world's smallest nations but its wildlife, including millions of seabirds and many endemic species, represents a significant part of the UK's and the world's biodiversity	IUCN Red List reports a stable population of key species over a five-year period e.g. Atlantic yellow-nosed albatross and Rockhopper penguin
<i>Purpose (5 years)</i>	<i>Description and justification</i>	<i>Indicators</i>
To enable the people of Tristan to actively engage in and benefit from the conservation of biodiversity on their islands	The economy of Tristan is, at present, almost completely dependent on the sustainable harvesting of it's wildlife, and so the conservation of the biodiversity of Tristan is of fundamental importance to the protection of livelihoods on the island	Use of the quota system to manage fisheries sustainably provides 90% of the total Tristan government revenue Revenue raised from tourism increases by 10% At least 10 Tristanians are actively involved in biodiversity conservation activities

<i>Objectives</i>	<i>Description and Justification</i>	<i>Indicators</i>
1. Biodiversity Conservation is integrated into all Government, programmes, policies and plans (nationally and internationally)	As the conservation of biodiversity is fundamental to livelihoods on the island any development plans must take its protection into account	References to biodiversity are made in the economic development plan 4 reports/year submitted to the South Atlantic Working Group Conservation Officer participates at Tristan Island Council meetings at least 2 times/year
2. Support for biodiversity conservation is strengthened on Tristan	The Darwin Initiative project has begun to raise awareness of conservation issues on Tristan but this process needs to be continued	1 conservation newsletter/year produced for the Tristan community Environmental education is included in the school curriculum Tests show school children are more aware of the natural heritage of Tristan da Cunha
3. Tristanians have the capacity to manage biodiversity effectively	Capacity is limited on Tristan therefore external support from South Africa and the UK is required. Although current legislation is being updated to take into account international agreements, there is a need to strengthen enforcement on Tristan.	Advisory Committee established for Protected Areas Conservation Officer uses network of contacts, particularly in the South Atlantic UKOTs in order to strengthen biodiversity management on Tristan Management plans for all four islands of the Tristan group are produced/updated and implemented
4. The impact of alien species are reduced or eliminated	The greatest threat to the wildlife of Tristan is from the introduction of alien species, both plant and animal.	There is no new introduction of alien species to the Tristan islands from each other and elsewhere <i>Sagina</i> is eradicated from Gough Flax is eradicated from Nightingale & Inaccessible Import of hay to Tristan ceases Impact of rodents on birdlife is decreased/halted through control/eradication

<p>5. The sustainable use and management of the marine environment is enhanced</p>	<p>The marine life of the Tristan islands is of global significance and holds many endemic species, yet there is little information or knowledge. The Tristan economy is almost entirely dependent on a sustainable harvest of marine resources.</p>	<p>Marine survey is undertaken</p> <p>Data is collected according to best practice and submitted annually for analysis to establish quotas</p>
<p>6. Knowledge of Tristan's key habitats and species is increased</p>	<p>Information is lacking on the numbers and distribution of many of the key species, particularly the native invertebrates. Very few species have had long term monitoring.</p>	<p>Annual monitoring of key species on Tristan and Nightingale is carried out as detailed in the monitoring manuals, and the data published or made available via the Tristan website</p> <p>A full terrestrial invertebrate survey of Tristan is undertaken</p> <p>Habitat survey undertaken every 5 years</p>

Conservation Framework

Roles and responsibilities:

Responsibility for the conservation of the biodiversity of Tristan da Cunha lies primarily with the Tristan Island Government, with advice from the governments of St Helena and the UK. The UK retains responsibility for external affairs, including the ratification of international conventions such as the Convention on Biological Diversity.

Financing conservation:

Tristan has an Environment Fund, which supports a small number of conservation activities. This is supplemented with funding from the joint UK Foreign and Commonwealth Office and Department for International Development Overseas Territories Environment Programme (OTEP) (to help support implementation of the Environment Charter) and the Department for Environment, Food and Rural Affairs' Darwin Initiative as well as from UK and international NGOs.

Legislation and Protected sites:

The first Protection Ordinance was passed at Tristan in 1950, with several subsequent additions. The latest revision to the Conservation Ordinance was agreed by the Tristan Island Council in June 2005, and approved by the Attorney General in St Helena in January 2006. The objectives of this comprehensive legislation are the maintenance of fauna, flora, geological, scenic and historical features of the islands. The Tristan da Cunha Fisheries Limits Ordinance of 1983, as amended in 1991, 1992, 1997 and 2001, defines the fisheries limit around each of the islands as 200 nautical miles, and makes provision for fishing within these limits.

Land management on Tristan, and the export and import of livestock and fresh goods is controlled by the Agricultural Ordinance of 1984.

Under the Tristan da Cunha Conservation Ordinance of 1976, Gough Island and its territorial waters out to three nautical miles was proclaimed a Wildlife Reserve. This was modified by the Tristan da Cunha Conservation Ordinance (Amendment) of 1997, such that Gough Island was renamed a Nature Reserve and the boundary was extended to 12 nautical miles. Gough Island is divided into a logistic zone (six ha. for support of the meteorological station), marine zone, scientific research zones, and the conservation zone that encompasses the vast majority of the island. A 'Management Plan for the Gough Island Nature Reserve' took effect in 1993, and is due to be amended in 2006.

Inaccessible Island was declared a Nature Reserve under Tristan da Cunha Conservation Ordinance (Amendment) of 1997, including the surrounding waters up to 12 nautical miles. Under this legislation, although Tristan islanders still retain the right to collect driftwood and guano, other access is restricted and all living resources are protected.

While Tristan Island and the Nightingale island group are not protected as Nature Reserves, they are subject to the Tristan da Cunha Conservation Ordinance as given above.

In total, some 44% of the land area of the Tristan da Cunha Territory has been set aside for conservation.

Protection of the birds of the Tristan group is provided for by the Tristan da Cunha Conservation Ordinance. Seabird harvesting is restricted to Nightingale and Alex islands. Penguin eggs are collected in September, and eggs, chicks and adults of the great shearwater are harvested throughout the summer on Nightingale.

International measures relevant for the conservation of sites:

As a territory of St Helena, Tristan da Cunha and Gough Island are included under the ratification by the UK of the Convention of Biological Diversity, CITES, the Ramsar Convention, the Convention on Migratory Species, and the World Heritage Convention. Gough Island was granted World Heritage status in December 1995, only the third British site to be so recognized for its biological value. In 2004, the World Heritage designation was extended to cover Inaccessible Island.

Many seabirds and other marine species spend significant proportions of their lifespans outwith the Tristan da Cunha EEZ, and their conservation in international waters is facilitated by international agreements, in particular Convention on Conservation of Antarctic Marine Living Resources (CCAMLR) and Agreement on Conservation of Albatrosses and Petrels (ACAP).

In April 2006, the UK Government ratified ACAP on behalf of Tristan. The priorities for action under this agreement will be the monitoring of populations of the three albatross species, Southern giant-petrel, Spectacled petrel and Grey petrel. Also the eradication of rodents from Tristan da Cunha and Gough and the development of rigorous quarantine procedures on materials entering Tristan and moving between islands in respect of rodents and avian diseases.

Conservation Management:

Much of the survey and monitoring of the biodiversity of Tristan da Cunha has been carried out to date by teams of visiting scientists. The capacity to carry out conservation work is limited on Tristan by a small workforce, lack of experience and very little formal scientific education.

The Tristan Darwin Initiative project has given fieldwork training to a team of ten government employees, and most conservation work will now be carried out by this team, led by the Tristan Conservation Officer and the Head of the Natural Resources Department. There will still be a need for specialist input for some taxa, but seabird and seal monitoring will be carried out by the government workforce. Where possible, at least two members of this team will work with any future conservation projects in order to maximise the training opportunities afforded by these projects.

Description and Biodiversity Audit

General Background

Location/geography

Tristan da Cunha is a group of six islands in the mid South Atlantic Ocean, 2,800 km from, Cape Town, South Africa and 3,950 km from Mar del Plata, South America. The main island of Tristan da Cunha itself, and the islands of Nightingale, Inaccessible, Alex and Stoltenhoff lie within 40km of each other and constitute the main Tristan da Cunha group. Gough Island is 350 km south-southeast of Tristan da Cunha itself.

The islands are of volcanic origin, of varying geological age and stage of erosion, with the oldest rocks dating back 18 million years. However, the main group shows evidence of recent activity (indeed there was a submarine eruption near Nightingale in August 2004 and an eruption on the main island of Tristan in 1961 resulted in a two-year evacuation of the entire community), and therefore cannot be regarded as volcanically extinct. Lying somewhat east of the crest of the mid-Atlantic Ridge, near its junction with the aseismic Walvis Ridge, the islands rise from a sea depth of about 3,500 m.

The islands are classed as a distinct Overseas Territory of the United Kingdom. There is no air link – transport to and from the islands is by fishing vessels every few months, and the annual visit by a South African research vessel.

People

The islands were first discovered by Portuguese sailors in 1506, and first inhabited in 1811, by a succession of British soldiers, sealers and whalers and shipwrecked sailors of various nationalities. The present population of 275 are the descendants of the seven early male settlers (Glass, Green, Hagan, Laverello, Repetto, Rogers and Swain). All age groups are represented with 64% of the population under the age of 55. The population has remained relatively stable since the 1960s. The number of families on the island is increasing while at the same time the average family unit becomes smaller.

The entire population live in one settlement, Edinburgh of the Seven Seas, which is in the north of the main island of Tristan.

As a UK Overseas Territory the UK Government, is represented by a resident Administrator who is advised by an Island Council of eight elected and three appointed members. The elected member with the most votes is chosen as Chief Islander and acts as Administrator during the latter's absence.

Economy

Tristan only became a cash economy in the 1950s when the crayfish industry was established. Until then it had been a subsistence living and it is still the case that some of the food of the islanders (meat, potatoes, a small amount of vegetables, fish) is not purchased but produced themselves.

Currently Tristan da Cunha is almost economically self-supporting – only large capital projects require overseas funding. Government revenue finances the provision of healthcare and education on the island.

The economy of Tristan is mainly based on the crayfish *Jasus tristani* fishery (the frozen product is exported), with small revenues raised from philately (worldwide sales) and handicrafts (mainly woollen goods).

In the past profits from the fishery have been used to build up reserves. However, Tristan is currently drawing on these reserves to maintain government activities as revenue from the crayfish industry is declining. The government is aware of the urgent need to diversify the economy as these reserves will soon be depleted. However, without the improvement of the harbour (see below) there are few options available for Tristan.

The government is the chief employer on the island with a workforce of 147. The crayfish factory provides permanent employment for 23 and casual employment for 36 fishermen and 70 factory workers on fishing days. Many of those employed in the crayfish industry also do casual work for the government as fishing only takes place on about 60 days/year. At present only one person is employed solely by a private venture. However, if incomes from tourism, including wildlife tourism increase, this could open up the possibility of private enterprise.

The Government own the one shop on the island and virtually all supplies come from Cape Town. Most items are subject to a 40% tax but basic foodstuffs, including flour, tea and sugar are exempt and in some cases subsidised.

Fisheries

The main commercial fishery of Tristan is for crayfish but other species taken commercially are octopus, bluefish, tuna and alfonsino.

The crayfish concession is held by a British registered company, Eurex, that has offices in South Africa (Ovenstone agencies). The two boats belonging to this company, the Edinburgh and Kelso, fish around the islands of Nightingale, Inaccessible and Gough for which a quota is set each year by the Natural Resources Department. Eurex owns the factory on Tristan and the 18 smaller boats that are used by the islanders to fish for the Tristan crayfish quota. The Tristan quota is caught solely by the Tristan fleet and only on days when the weather is fine. These fishing days are decided by a team of two on a daily basis – a ‘dong’ is rung early in the morning to signify a fishing day and then the fishermen and the factory workers are employed on the crayfish fishing that day. The crayfish fishing season begins in July/August and continues until the quotas have been caught, usually in March.

There is no trawling of the seamounts taking place at the present. Tristan grants one licence for long lining each year. In 2006 it has been sold to Quayside fishing.

The present sea fisheries patrol boat is a 34ft fibreglass boat with a range of about 200 miles. There is a limit to the size of fisheries patrol vessel that can be kept on Tristan due to the harbour restrictions (see below). The NRD uses this vessel to patrol the northern islands of Nightingale, Inaccessible and Tristan, but there is no capability on Tristan to patrol the waters around Gough. In the future it is hoped to use VMS (Vessel Monitoring Systems) and satellite surveillance to protect the Tristan fisheries. For the present Tristan relies on the crayfish boats, and the occasional military boat travelling through the area, to report any illegal fishing.

The NRD is responsible for providing the information necessary to manage the fisheries, and fisheries observers are placed on as many boats as possible. Data taken from the catches is analysed and this information is used to set quotas. In the case of the crayfish fishery 5,000 samples are taken from each island and measurements taken from these. This data, along with information on catch per unit effort (CPUE), used to be analysed by Marine Resource Assessment Group (MRAG), but is now fed into a computer modelling programme in Tristan, which then allows the NRD to set the Total Allowable Catch (TAC) for the next season.

The management of the fishery around the main island of Tristan is decided by a fishing committee, which has eight members representing the fishermen, the fishing company, the NRD and the Island Council. The Tristan fishery is controlled not only by the quota given for the island, but also by the amount of time boats are allowed to spend in the water on fishing days. This limits how far from the harbour the boats are able to fish.

The management of the crayfish fishery around Tristan seems to be sustainable. This was not always the case, and until the 90s the stocks were decreasing due to overfishing. The stocks presently appear to be recovering, although those around Gough are lagging behind possibly due to poaching.

Tourism

At present there is little tourism to Tristan, but this is beginning to increase. Most tourists used to come on the Royal Mail Ship St Helena, but apart from a one off to celebrate the Tristan quincentenary in January 2006, this made its last run to Tristan in January 04. However, there are increasing opportunities for visitors to come on other cruise ships, and in recent years tourists have also come to the island on the South African research vessel SA Agulhas. In 2006, 8 cruise ships have visited raising £22,689 in landing fees. The Royal Mail Ship alone, which visited Tristan in February 2006 and where passengers stayed on the island for a week, raised £8,100. This is significantly higher than the two ships, which visited in 2005 that raised £2,150.

There is no hotel on Tristan and tourists that stay on the island stay either with an island family or rent one of the houses available for self-catering.

The majority of tourists arrive on a cruise ship, although many of these do not land because of the harbour restrictions (see below). Tourists provide an important source of government revenue in the form of landing fees and purchases from the Post Office. They also buy handicrafts and pay for guides, which forms an important part of the private income for some people.

Harbour

The present harbour was built in the 1960s, after the previously used landing beach was covered by the lava flow from the 1961 eruption. The harbour is very prone to being closed by bad weather and is only in use 80-100 days of the year. Boats kept on Tristan are lifted in and out of the harbour by crane. This places severe restrictions on the island. There are many occasions when passengers and freight cannot be landed because of the weather conditions, and there is a limit to the size of boat that can use the harbour both because of the need to be lifted by crane and the shallow depth of the harbour. At present most cruise ship passengers that visit Tristan do not land on the island because of the dangerous nature of the harbour. EU funding has now been approved to improve the existing harbour but it still will not remove the problems associated with landing cruise ships.

Agriculture

Each family has sheep and cattle, and grows potatoes.

Sheep

There are approximately 3000 sheep on Tristan. Most of these are grazed in the settlement plain in the north of the island. The numbers of sheep in this area are strictly controlled and each family is only allowed to keep 8 sheep in this area. This may well be reduced to 7 in the near future as the number of families increases.

The sheep are sheared annually in December, and everyone on the island helps with this process. The sheep are all gathered and then those belonging to individual families are penned separately and then sheared and marked. This is also an occasion when many sheep are slaughtered in one of two slaughterhouses. The meat is stored in home freezers and in crates in the island store freezer.

On the mountain plateau there are a number of herds of sheep owned by groups of people who are collectively responsible for shearing these and bringing them down for slaughter. Not everyone on the island has animals on the base, but often mutton from these animals is given away to those who do not have mountain sheep. The meat tastes significantly different to the mutton from sheep on the coast plain. Some fences have been erected on the mountain plateau to separate the different herds of mountain sheep, although many of these are in need of repair. Fencing materials are taken up to the base by helicopter on the very few occasions when this is possible but they are hard to maintain, and in general the sheep are free-ranging. The groups who own the mountain sheep only go up to gather them once or twice a year. The sheep are either slaughtered up on the Base and the meat carried down, or they are driven down the two access routes with the aid of dogs, and slaughtered in the village.

Although there are now fewer people maintaining herds on the Base than in the past, sheep are still present in relatively large numbers. Many sheep are now feral, and there is nothing controlling their numbers. Sheep grazing has almost certainly been responsible for the spread of introduced plants on the mountain.

Cattle

Most of the island cattle are kept on the settlement plain – in fact many of them graze in the village itself. There are about 700 kept here, including two bulls. Each family is entitled to two cows, which are slaughtered annually, in addition to the breeding animals.

There are also three herds of cattle on the other coastal plains, comprising a total of about 300 animals. These are owned privately, but not every family has cattle here and recently those who have cattle in these herds have sold their surplus beef. Breeding heifers are taken to these areas by boat, and the animals are shot and butchered in the open before the meat is brought back by boat.

Cattle feed in the form of hay is brought in from Cape Town. The UK government used to provide fertiliser for the island, but when this was stopped in the 1980s grazing was not rich enough to provide for all the cattle, and it was cheaper to import fodder than fertiliser. Unfortunately, this imported fodder has been the source of many of the introduced plant species.

Other livestock

The agriculture department owns a breeding sow, and the piglets are sold for fattening. Almost all households have hens and ducks, which lay for most of the year. Donkeys are still kept on Tristan although they have not been used for transport for many years.

Crops

Potatoes are the main crop and these are grown at the Patches, about three miles from the village. Other vegetables are grown at the patches, and also on plots within the village. All families own potato plots, which are dug and planted by hand. Most of the seed stock is from the island, but occasionally fresh seed potatoes are brought in from Cape Town. Agricultural weeds (known locally as Kikuyu Grass, Logan berry, Fumitory, Milk Weed, and Yellow Nut Grass) are a big problem, especially as the soil is turned by hand. Most plots are sprayed before planting, but several plots have now been abandoned, as they are overgrown with weeds. Again it would serve both conservation and agricultural interests to investigate control methods for these introduced plants.

Seabird harvesting

Since the earliest settlements on Tristan da Cunha seabirds have formed an important part of the diet of the islanders. Until 1976 this was unregulated. With the introduction of the Tristan da Cunha Conservation Ordinance of 1976 and subsequent amendments, the taking of seabirds and their eggs was prohibited on Tristan, Gough and Inaccessible.

The taking of Northern rockhopper penguin eggs and juvenile and adult great shearwaters is still permitted on Nightingale. The penguin eggs are normally taken from the largest rookery on Nightingale and from the nearby islet called Alex Island. The collection is made in September by a team of about 6 islanders, and the eggs are then distributed throughout the households. In 2003, 600 eggs were taken. There were none collected in 2004 and 2,000 in 2005. The small numbers collected are thought unlikely to have an effect on the population.

Great shearwater chicks and adults are collected from burrows in a specific area of Nightingale Island. No record is kept of numbers taken, although the total is almost certainly going down. It used to be traditional for eight long boats each with a team of four to go to Nightingale for shearwaters, but in 2003 only two boats went. The shearwaters are still plentiful in the area where the collection takes place, and the density based on personal observations of the hunters seems the same from year to year, suggesting that the taking of shearwaters is not having any effect on the overall population.

The other islands

The other islands are uninhabited, but there are traditional longboat trips to Nightingale Island for seabird and guano harvesting. About 30 wooden huts and shacks, and pathways, have been constructed on Nightingale for this purpose. Inaccessible Island has been less often visited since 1938, but before then was visited more frequently than Nightingale. A research hut built on Inaccessible by the Denstone Expedition in 1982 was both demolished and replaced in January 2000. The only settlement on Gough is the meteorological station, about 10 buildings, at Transvaal Bay in the south-east of the island.

Biodiversity

The islands are primarily known for their birdlife (See Annex 4 for birdlist). The six species of breeding landbird are all endemic, and there are millions of pairs of breeding seabirds. Four species of seabird – the Atlantic yellow-nosed albatross, Tristan albatross, Atlantic petrel and Spectacled petrel - are endemic, and the Tristan da Cunha group is internationally important for their breeding populations of some eighteen other species. There are two endemic bird areas covering the main Tristan group and Gough. At least 212 plant taxa (See Annex 6 for plantlist) have been recorded, including 35 native ferns and 58 native flowering plants. Of these, 20 fern and 34 flowering plant taxa are considered to be endemic. There are no reptiles, amphibians or freshwater fish, and there are no records, other than poultry, of introduced birds. An invertebrate fauna (See Annex 7 for list) includes weevils and snails of particular interest, but with a relatively low number of native species. The only native breeding mammals are seals, Subantarctic fur seal and Southern elephant seal, which have been exploited in the past. Five whales - Southern right whalesperm whale, Humpback whale, Long-finned pilot whale and Shepherd's beaked whale occur relatively frequently, the last with regular strandings. Various species of dolphin, including Dusky dolphin, are common.

Conservation Threats

The two main threats to biodiversity on all the islands are introduced invasive species and Long-line fishing. Longline fishing is a major threat to some of the Procellariiform seabirds on the island, most notably the Spectacled petrel, Tristan albatross, Atlantic yellow-nosed albatross and Sooty albatross. Large-scale mortality of the former two species has been recorded off the South American continental shelf near southern Brazil. Illegal fishing in the Tristan EEZ may also contribute significant mortality.

The six islands of the Territory each have distinct topographical, floral and faunistic characteristics. We have only included a summary here:

Tristan da Cunha

Area: 96 km²

Conservation Status:

The Northern rockhopper penguin colonies on Tristan are classified as nature reserves. Tristan is subject to the Tristan da Cunha Conservation Ordinance. The south-eastern sector, which remains the largest refuge for the Tristan thrush and seabirds, and is rarely visited, should remain a wilderness area.

Geology and geomorphology:

Roughly circular in plan with an average diameter of some 12 km, Tristan is a strato-volcano made up of interbedded lavas (mainly basaltic) and pyroclastic deposits, with a central cone, the Peak, rising to 2,060 m. A series of ravines, locally known as gulches, radiate from the central peak down to the coast. It is geologically the youngest in the group, c.500,000 years old. At the summit it is an unbreached crater, and there are several crater lakes on the plateau (known as the base) at just above 600m. There are two significant coastal plains – the settlement plain in the north and a smaller one between Cave Point and Stoney Beach in the south.

Habitats:

Nine broad habitat types can be identified on the island, defined by a dominant vegetation type and which are determined by altitude, aspect and topography (See Annex 3a for habitat map). While they fall into bands roughly determined by altitude, most are mosaics of many of the plant species with one species being more common than the others – for instance areas designated as *Blechnum palmiforme* heath are often interspersed by patches of *Phyllica* trees and *Empetrum rubrum*. The nine habitat types are as follows:

Lowland Grassland

The lowland plains are dominated by alien grasses, which provide grazing for sheep and cattle. Tussock grass was once widespread on the settlement plain but is now found only in small patches, mainly along the edges of the low sea cliffs, although it is found in abundance at the other islands of the group. Alien grasses are not confined to low altitudes however, they are found in patches in all areas of the base and have even been recorded as high as 1,600m within the cinders zone. Alien grasses appear to be most prevalent in areas of disturbance such as areas grazed by sheep (eg Nellie's Hump) and areas of nutrient enrichment such as around albatross nests.

***Blechnum penna-marina* heath**

The heath is dominated by a low-lying fern, which thrives on the steepest of slopes. It is most common on the sea cliffs and the sides of gulches that intersect the base.

***Blechnum palmiforme* heath**

This habitat is dominated by small tree ferns, referred to as bog ferns. It occurs at intermediate altitudes, from the upper levels of the sea cliffs to the steeper gradients on the base where it is replaced by grasses and mosses. The size of the ferns varies according to age and exposure; in a sheltered area they will grow to about a metre in height whereas those on exposed ridges are much reduced in size.

***Phyllica* woodland**

Phyllica trees dominate this habitat. They are found at similar altitudes to the bog ferns, and are often found growing together. They tend to thrive better in slightly sheltered situations, and are commonly found at the bottom of gulches and throughout the side of the island sheltered from the prevailing westerlies where they form an almost continuous cover. In unusual circumstances *Phyllica* will grow to a considerable size, up to 10 m or so, but are usually no more than 2 or 3m in height. In exposed positions they will adopt a recumbent habit, growing small creeping branches that rarely extend more than 30 cm above the ground.

***Empetrum rubrum* heath**

This procumbent plant dominates some areas on the base and is also found at low altitudes, particularly at the south of the island. It produces large numbers of berries which are collected by the islanders.

Wet heath

A small number of places are permanently waterlogged and consequently support a different flora, dominated by mosses. The area known as Soggy Plain is the largest occurrence of this habitat type.

Upland grassland

The main species occurring here is *Rumex acetosella*, locally known as 'sour-grass'. It is particularly abundant in the higher-mid altitudes, between the bogfern/*Phyllica* habitats and the *Rhacomitrium* moss habitat, which is common higher on the mountain. While some areas will be dominated by *Rumex* plants, it is usual to find introduced farm grasses mixed in with, and at times completely replacing it.

***Rhacomitrium* moss**

Large areas of the higher reaches of the mountain are covered with this pale green moss which is able to colonise, and appears to stabilise, some of the cinder slopes. It also occurs in small patches on rock outcrops at these high altitudes and has been found at the highest point of the peak. Its habit of colonising loose substrates means that it is easily dislodged by walkers and sheep; the few human visitors to this altitude tend to follow fixed routes and are therefore unlikely to create any significant impact at the present rate of useage but the impact of sheep at higher altitudes is noticeable.

Cinders

The highest reaches of the mountain are dominated by a cinder cone, which consists of scree slopes, which are highly mobile and colonised by a few hardy lichens and mosses that can withstand the severe climatic conditions experienced at these altitudes.

In addition to the major habitats outlined above there are additional areas of non-native grassland and woodland on the settlement plain. Around the village in particular are dense stands of New Zealand flax, which was formerly cultivated to provide roofing materials for the islanders' houses, while today its primary function is to provide gardens with a wind-break. A plantation of pine and eucalyptus trees with occasional fruit trees and bushes, which is no longer managed, is located at Sandy Point on the East coast.

Birds:

Although as many as 56 bird taxa have been recorded (including visitors and vagrants), there are now only 13 known species of breeding seabirds and two species of resident landbirds. The seabirds are Northern rockhopper penguins, Atlantic yellow-nosed albatrosses, Sooty albatrosses, Atlantic petrels, Great-winged petrels, Soft-plumaged petrels, Broad-billed prions, Grey petrels, Great shearwaters, Sooty shearwaters, Subantarctic skuas, Antarctic terns and Brown noddies (See Annex 4 for status and population estimates). Tristan is the only known breeding site within the group for Atlantic petrels (except Gough) and for Sooty shearwaters while numbers of the endangered Atlantic yellow-nosed albatrosses are the highest for any island in the Tristan group. Kerguelen petrels and Little shearwaters may also breed; there is a remote possibility that the critically endangered Spectacled petrel breeds, and this requires further investigation. There are currently an estimated 20,000-40,000 breeding pairs of seabirds, most known from the south-eastern quadrant, which has suffered least from human disturbance. The terrestrial species include the Gough moorhen, introduced from Gough Island in 1956, and a subspecies of the Tristan thrush, confined to this island and numbering 50 – 80 pairs in 2004.

There are more records of non-breeding visitors and vagrants on Tristan than from the other islands of the group. This is probably due to the island's larger size and permanent human presence. The strong westerlies create favourable conditions for a crossing from South America, and this would explain the presence of gallinules and other non-breeding landbirds that have reached Tristan from that continent.

Tristan requires much further field study, especially the southern side.

Mammals:

There are no endemic terrestrial mammals. The only breeding native mammal is the Subantarctic fur seal *Arctocephalus tropicalis*, of which there is a small colony at Cave Point on the south side of the island. Southern elephant seals *Mirounga leonina* haul out regularly on Tristan beaches and breed sporadically. Southern right whales occur in offshore waters between September and November, but in very low numbers.

The ship (black) rat arrived on Tristan in 1882 from the *Henry B. Paul*, which ran aground at Sandy Point. The house mouse was probably introduced by sealers during the 18th century. These rodents have negatively impacted on the biodiversity of Tristan, particularly the bird populations. Richardson (1984) suggests 'the greatest present threat from introduced species to the birds of the group comes from the ship rat *Rattus rattus*'. The ship rat was almost certainly a significant factor in the severe depletion or local extinction of burrowing petrel populations and was likely a contributing factor to the extinction of the Tristan moorhen. It is likely they are also affecting invertebrates and vegetation but these areas are poorly studied.

Domestic cats (*Felis domesticus*) were present on Tristan from the time of settlement in 1811 (Wace & Holdgate 1976) and by 1824 a feral population had established itself (McCormick 1966). The domestic population was eradicated in 1974 due to the suspected link to a case of Toxoplasmosis. The feral population has apparently also died out, with no sightings or signs of cats since.

Invertebrates:

For the northern islands of the archipelago, the most comprehensive study was carried out by the Norwegian Scientific Expedition in 1937/38, which focused on Tristan, but also included Nightingale and Inaccessible. Despite the huge contribution this made, not all taxa known to exist at the islands could in the limited time be covered, leaving to the present, groups like the spiders, mites, collembola, worms and groups, still largely unrecorded.

Essentially the fauna represented at the islands is an impoverished one, but includes a significant portion of flightless invertebrates, many of which are endemic to the archipelago and limited to individual islands. Using this as a baseline, subsequent collections have shown that alien species are increasingly colonizing the islands with many of them having become pests on Tristan, affecting in particular crops and also livestock of the islanders.

Of the currently estimated 96 native terrestrial invertebrates recorded from the island, at least 27 are rated as endemics. Of those, six species, are restricted to just Tristan.

Conservation issues/threats:

Tristan itself, as the only permanently inhabited island, has incurred the greatest effects of human activity. These include overgrazing by sheep, tree-felling, fire and, in particular, predation by introduced mammals.

Before the arrival of man, the island may have supported 19 seabird species and three landbird species. The Tristan albatross became extinct as a breeder between 1880 and 1907 due to excessive harvesting, and the Southern giant-petrel probably became similarly extinct around 1870 due to disturbance and a decrease in its food supply, and is now only a non-breeding visitor to the main Tristan group. The Southern skua may soon also disappear as a breeding species due to persecution and a reduced food supply. The Tristan bunting became extinct on Tristan between 1852 and 1873. The Tristan moorhen is thought to have become extinct between 1873 and 1906.

Seabird populations are likely to have been massively reduced since human occupation, as a result primarily of cat and rat predation, the latter of which is ongoing. Many of the seabird populations on Tristan – such as the Atlantic petrel - are now reduced to tiny remnants, and the smaller species (common diving petrel and several storm-petrel species) are thought to be locally extinct. The current status of seabird populations on Tristan da Cunha is very poorly understood. For the majority of species, there has been no assessment of numbers since the early 1970s. As a result, it is unclear whether declines are ongoing. Given the continued presence of rats, this seems likely.

On Tristan, the Tristan thrush has decreased markedly, due to overgrazing, introductions of alien plants, predation by cats and nest-predation by rats. The current population is patchy and largely restricted to high alpine slopes, and gulches on the Base plateau. There are no accurate data on population trends, but a decrease is suggested by reports that the species no longer inhabits 'gulches' near the Hillpiece (Settlement Plain), nor visits the settlement itself, even though in the last 25 years birds have been seen in *Phyllica* above the new volcano. The genetic identity of the population is threatened by introgression from other subspecies brought over from Inaccessible and Nightingale Islands.

It would appear that indigenous invertebrate species, especially the flightless ones such as the endemic flightless moths *Dimorphinotua cunhaensis* and *D. pilifera* are declining, possibly because they are vulnerable to predators and being out-competed for space and resources.

It is unclear whether invasive alien plants or invertebrates are having a significant effect on the native biota of Tristan da Cunha, although this is certainly a significant risk. Overall, the current status of and threats to Tristan's biota are very poorly known, and further information is needed before effective conservation management can take place.

Nightingale

Area: 2.6 km²

Conservation Status:

Nightingale has no protected area status though it is subject to the Tristan da Cunha Conservation and Fisheries Ordinances. A management plan has been prepared for the island in 2006.

Geology and geomorphology:

Nightingale Island lies 38 km south-west of Tristan and 22 km south-east of Inaccessible Island. The maximum height of the island is High Ridge, which rises to 337 m. There are no streams or gulches, but in the centre are four marshy areas known as 'The Ponds', in one of which are pools of open water (See Annex 3d for map).

Habitat:

The flora of the island is poor in species, due to the small size and narrow range of environments. Nineteen species of vascular plants and 15 pteridophytes are native, and by 1968 only six alien vascular plants had been recorded. The predominant vegetation is dense *Spartina* tussock-grassland, forming almost pure stands 2–3 m in height, usually on hard fibrous peat. There are some 20 ha of *Phylica*, in small groves, which have few epiphytes, other than lichens, and a sparse understorey. Around the central swamps, and on some of adjoining gently sloping ground, meadows of hummock-forming *Scirpus bicolor* replace the *Spartina*. Kelp extends off shore in the east but there is less to the south and west.

Birds:

Thirteen species of breeding seabird and three of the native landbirds occur. The seabirds comprise Northern rockhopper penguin, Atlantic yellow-nosed albatross, Sooty albatross, Soft-plumaged petrel, Broad-billed prion, Great shearwater, Little shearwater, white-faced storm-petrel, white-bellied storm-petrel, common diving-petrel, Southern skua, Antarctic tern and Brown noddy. The breeding population of Great shearwater is the largest known, and at the highest density in the world, with an estimated one million pairs per km². Kerguelen petrel may also breed. The terrestrial species include the Tristan thrush (a subspecies unique to the Nightingale group), Tristan bunting and Wilkins' bunting.

Mammals:

The only breeding native mammal is the Subantarctic fur seal *Arctocephalus tropicalis*. The population appears to be increasing.

Invertebrates:

Currently at least 49 species of native terrestrial invertebrates are known of which the majority (30+spp) are endemics. These include five endemic listroderine weevils, all of which are specific and restricted to Nightingale, and seven of endemic drosophilid *Scaptomyza*, including the strap wing fly *S. frustulifera*.

Conservation issues/threats:

This island has been less affected by alien animals than Tristan and no alien vertebrates have become established. Besides the annual harvest by Tristan islanders of Northern rockhopper penguin eggs, Great shearwater eggs, chicks, and adults, of which the annual toll is not high, the remaining seabirds are little affected. The introduction of mammalian predators and tussock fires are the principal threats, while the recent die-back of trees, possibly caused by an introduced fungal pathogen, is being investigated and is, potentially, serious for Wilkins' bunting.

The presence of several alien plants, including New Zealand Flax, gives some cause for concern, although actions to reduce this threat have commenced. The presence and impact of introduced invertebrates is not known.

Nightingale is the main island for nature tourism so all visitors must be informed about the risk of accidental introductions and take necessary precautions.

It is thought the increase in seal populations may be negatively impacting on the rockhopper colonies but further research is required.

Alex Island

Area: 0.5 km²

Geology and geomorphology:

Known also as Middle Island, Alex Island lies 100 m north to north-west of Nightingale Island. Containing the oldest rocks, it rises to a height of 46 m. The island is largely composed of volcanic tuff.

Habitat: The island is covered in *Spartina* tussock and has a few boggy areas. Pin Rock, 9 m high, lies off the north-western extremity.

Birds: There is a large Northern rockhopper penguin colony.

Mammals: The only breeding native mammal is the Subantarctic fur seal *Arctocephalus tropicalis*.

Stoltenhoff Island

Area: 0.2km²

Geology and geomorphology:

Stoltenhoff Island lies 1.5 km north of Nightingale Island, and rises steeply to 99 m at its southerly point. To the east, separated from the island and each other by narrow chasms, are a high narrow pinnacle and a large, vegetated stack.

Habitat:

On its westerly (windward) side, low cliffs give way to bare rock where brackish water collects. The island is otherwise covered with short *Spartina* tussock below 1 m in height, through which many rocky outcrops protrude. Only one stunted tree (*Phyllica*) has been recorded.

Inaccessible

Area: 14 km²

Conservation Status:

The island, including the surrounding waters up to 12 nautical miles, was declared a Nature Reserve in 1997, although islanders retain the right to visit. The Gough Island World Heritage Site was extended to cover Inaccessible Island in 2004.

Geology and geomorphology:

Inaccessible Island lies 40 km south-west of Tristan. Roughly rhomboidal in plan, it is 14 km² in size, 5.7 km from west to east, and 4.6 km north-south. The highest part, Swales Fell, in the west, rises to 550 m. Geologically, it is the second youngest in the Tristan group, around three million years old, and it is a volcanic remnant dominated by interbedded basalt flows and pyroclastic deposits that dip gently towards the east. Cliffs rise sheer from sea-level round most of the coastline, to 500 m at Swales Fell. The inland plateau comprises three principal drainage systems, with numerous additional ravines and gulches, a shallow central basin and a few small, conical hills. Narrow boulder beaches are present at the base of most cliffs, but are wider at Salt Beach and Waterfall Beach, in the north-east. Landslide material at West Point forms the only extensive, relatively flat land area at sea-level. A recent bog, about 400 years old, incorporates the only area of open standing freshwater on the island.

Habitat:

The vegetation comprises three main types. The lower slopes are blanketed with dense, uniform *Spartina* tussock-grassland, up to 2.5 m high. The western part of the plateau comprises largely *Blechnum* tree-ferns, interspersed with stunted thickets (about 1 m) of *Phylica* trees. Dense stands of taller *Phylica* (3 m or more) occur in the lower, eastern part of the plateau and at sea-level at Skua Bog in the west. Scattered *Phylica* occurs elsewhere over much of the island, particularly in sheltered 'gulches'. Encircling the island is a sublittoral zone of *Macrocystis* kelp. Wet heath is found along the highest ridges.

Birds:

Sixteen species of breeding seabirds and four of native landbirds occur. The seabirds include Northern rockhopper penguin, Tristan albatross, Atlantic yellow-nosed albatross, Sooty albatross, Kerguelen petrel, Soft-plumaged petrel, Broad-billed prion, Spectacled petrel, Great shearwater, Little shearwater, White-faced storm-petrel, White-bellied storm-petrel, Common diving-petrel, Southern skua, Antarctic tern and Brown noddy. It is possible that Great-winged petrel, Atlantic petrel and Grey petrel also breed here.

The critically endangered Spectacled petrel is, so far as is currently known, entirely restricted to Inaccessible Island for breeding. A census in 1999 estimated 6,000 pairs; a repeat census in 2004 found approximately 9,000 pairs.

The island is one of only two breeding localities for the endangered Tristan albatross, although the Inaccessible population has been reduced to 2-3 pairs.

The terrestrial species comprise the endemic flightless Inaccessible rail, a subspecies of the Tristan thrush, Tristan bunting and Wilkins' bunting.

Mammals:

The only breeding mammal is the Subantarctic fur seal *Arctocephalus tropicalis*. Southern Elephant Seals haul out regularly. Southern elephant seals haul out regularly. In the past the island was used to graze sheep, cattle, and pigs, but these species have not been present on the island since at least 1974 (Richardson, 1984).

Invertebrates:

At least 39 species of native terrestrial invertebrates are known. The island is particularly rich in the listroderine weevils, endemic to the Tristan group as a whole.

Conservation issues and threats:

Perhaps its greatest value is its virtually unspoilt state. The greatest and most immediate threats are the introduction of alien predators, most notably rats and mice, and the accidental burning of the tussock.

A number of invasive alien plants already occur. New Zealand flax, which has the potential to exclude native vegetation communities, was spreading around the cliff northwest of the Waterfall, until control efforts in 2004 removed all large plants. Followup is required to remove seedlings and any small plants that were overlooked. The introduced grass *Holcus lanatus* and dock *Rumex obtusifolius* are both widespread on the plateau, with the former apparently having the ability to exclude native species. Other localised alien plants may cause problems in the future. There are at least 12 alien invertebrate species. Earthworms, slugs and woodlice, all formerly absent, are now widespread and abundant, with unknown effects on the ecology of the island.

Visits to the island must be carefully controlled as two new alien plant species were introduced in 1999/2000 during the construction of the research hut.

Gough

Area: 65 km²

Conservation Status:

In 1976 Gough Island was declared a Wildlife Reserve and in 1997 it was renamed a Nature Reserve and its boundaries were extended to 12 nautical miles. It was listed as a World Heritage Site in 1995.

Geology and geomorphology:

Gough Island is 350km south-south east of the main island of Tristan, and is the most complex in both terrain and structure. Gough is a basaltic shield volcano with a complex structure resulting from four main periods of volcanic activity, the last of which ceased at least 0.2 to 0.1 million years ago. More or less rectangular, it is 13 km in length from north-west to south-east, and over 5 km from south-west to north-east at its widest point. The summit, Edinburgh Peak, reaches 910 m, and the second highest point, Gonzalo Alvarez, 894 m. The upland plateau has deep glens running from it in the East and more convex slopes in the West.

Habitats:

The vegetation exhibits marked changes with altitude in relation to climatic differences, and five types are described. At the coast it consists of tussock-grassland on the offshore stacks, sea cliffs and adjacent slopes where salt spray is regular.

Fern bush occurs above the coastal grassland, up to about 500 m. It is better developed on the more sheltered eastern side and is most extensive on the southern coastal lowlands. The deciduous fern *Histiopteris incisa* forms the dominant climax assemblage. Fern bush is also characterized by *Phyllica arborea* and *Blechnum palmiforme*. *Sophora microphylla*, the only other woody tree on the island, is restricted to a few individuals in Sophora Glen. Wet heath occurs from the upper limit of fern bush to above 800 m in sheltered locations. It is a transitional vegetation-type, with fairly short plants, less than 1 m high. Diverse, it contains species found in virtually all other vegetation-types. Three assemblages are recognized, dominated by *Blechnum*, *Empetrum* and grasses and sedges respectively. Feldmark, a community of dwarf, cushion-forming or crevice plants, is found on exposed areas such as ridges, above 600 m. Dwarf *Empetrum rubrum*, *Lycopodium magellanicum*, *Huperzia insularis*, *Acaena stangii*, *Agrostis media*, *A. carmichaelii* and several sedges, mosses and lichens characterize this alpine community. Peatbogs are widespread on the level uplands above 600 m. The bogs are sodden, and are dominated by *Sphagnum* mosses and a number of hepatics. The only abundant vascular plants are *Tetronicum magellanicum* and *Scirpus* spp. However, a wider diversity occurs along bog margins, including *Empetrum rubrum* and various grasses.

Offshore, 40 species of algae are recorded, of which two are endemic. From sea-level to 5 m depth, the principal species is the bull kelp *Durvillea antarctica*. Beyond 20 m the dominants are *Laminaria pallida* and the giant kelp *Macrocystis pyrifera*.

Birds:

The site has been described as 'a strong contender for the title of most important seabird colony in the world'. The breeding seabirds include Northern rockhopper penguin (about 48% of world population), Tristan albatross, Atlantic yellow-nosed albatross, Sooty albatross, Southern giant-petrel, Kerguelen petrel, Great-winged petrel, Soft-plumaged petrel, Atlantic petrel, Broad-billed prion, Grey petrel, Great shearwater, Little shearwater, Grey-backed storm-petrel, White-faced storm-petrel, White-bellied storm-petrel, Common diving petrel, Southern skua, Antarctic tern and Brown noddy. The island holds well over 90% of the world population of the endangered Tristan albatross and the Atlantic petrel. The terrestrial species are the Gough moorhen and Gough bunting.

Mammals:

There are only two native breeding mammals. In the 1970s 90% of the global Subantarctic fur seal *Arctocephalus tropicalis* population was found on Gough. Numbers are about 200,000 individuals and increasing. The Southern elephant seal *Mirounga leonina* (about 100 individuals) was in decline but recent counts indicate the population has stabilised.

House mice are the only introduced mammals, and there is no record of them on the offshore islets and stacks. Goats and sheep have been introduced in the past, but are no longer present.

Invertebrates:

Several hundred freshwater and terrestrial invertebrates have been recorded. Among winged insects, only 28 species out of 99 recorded are thought to be native, of which at least eight are endemic, while 14 are native to the Territory as a whole.

Conservation issues/threats:

The only introduced vertebrate is the house mouse. Recent evidence from other islands suggests that this species can have profound effects on invertebrate populations, plant population dynamics and nutrient cycling in Subantarctic ecosystems. Perhaps even more importantly, new evidence from Gough shows that the species has evolved to become a major predator of Procellariiform seabird chicks. Predation on the Tristan albatross, Great shearwater and Atlantic petrel has been confirmed to date, but probably extends much more widely. There may also be substantial predation on and competition with the Gough bunting. Mice are therefore thought to be having a major impact on Gough's terrestrial biota. Introduction of other vertebrates – most notably rats, would be catastrophic.

There are numerous introduced invertebrate species, which may be having a profound effect on the island's ecology. Relatively few invasive alien plants are known, but *Sagina procumbens*, having survived an eradication attempt in 1999, has the potential to spread and cause substantial damage.

New evidence suggests that the population of Northern rockhopper penguins has declined substantially since the 1950's, in common with populations elsewhere in the range. The causes are unknown.

Annex 1

ABBREVIATIONS USED IN THE TEXT

ACAP	Agreement on the Conservation of Albatrosses and Petrels
CCAMLR	Convention on Conservation of Antarctic Marine Living Resources
CITES	Convention on International Trade in Endangered Species
EEZ	Exclusive Economic Zone
FCO	UK Foreign and Commonwealth Office
OTEP	(UK) Overseas Territories Environment Programme

Annex 2

BIBLIOGRAPHY

- Abbott, I. (1974) Numbers of plant, insect and land bird species on nineteen remote islands in the Southern Hemisphere. *Journal of the Linnean Society (Botany)* 6: 143-152.
- Anastos, G. (1954) Description of a tick, *Ixodes percavatur*, Neumann, 1906, from Tristan da Cunha. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937 – 1938* 4(27):1-4.
- Baird, D.E. (1965) The effects of the eruption of 1961 on the fauna of Tristan da Cunha. Part V. *Philosophical Transactions of the Royal Society London* B249:425-34.
- Barnard, K.H. (1965) Isopoda and Amphipoda collected by the Gough Island Scientific Survey. *Annals of the South African Museum* 48(9):195-210.
- Beier, M. (1955) Pseudoscorpione von Tristan da Cunha. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937 – 1938* 4(35):7-10.
- Bester, M.N. (1989) Endoparasites of the sub-Antarctic Fur Seal *Arctocephalus tropicalis* from Gough Island. *South African Journal of Zoology* 24(4):363-65.
- Bester, MN, Moller, H, Wium, J, Enslin, B. (2001) Tristan Island: An update on the status of southern elephant seals at Gough Island. *South African Journal of Wildlife Research* 31:68 – 71.
- Beuaert, J. (1954) Hippoboscidae. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937 – 1938* 4(26):45-46.
- Bradley, J.D. (1958) Microlepidoptera collected by the Gough Island Scientific Survey 1955-56. *The Entomologist* 91(1143):178-80.
- Brink, P. (1948) Coleoptera of Tristan da Cunha. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937 – 1938* 3(17):1-121.
- Brinkmann, A. (1947) A new land Nemertean from the Tristan da Cunha Group, and a survey of the genus, *Geonemertes*. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 3(15):1-24.
- Broekhuysen, G. J. and Macnae, W. (1948) The Potato Caterpillar Pest (*Agrotis spec.*) of Tristan da Cunha. *Nature* 162(4110):225-26.

Broekhuysen, G. J. and Macnae, W. (1949) Observations on the birds of the Tristan da Cunha islands and Gough Island in February and early March 1948. *Ardea* 37: 97-113.

Brooke, R. K. (1979) Some mid-XIX Century bird collections from Tristan da Cunha. *Cormorant* 7: 24-26.

Chamberlain, Y., Holdgate, M.W. & Wace, N. (1985) The littoral ecology of Gough Island, South Atlantic Ocean. *Tethys* 11(3-4):302-19.

China, W.E. (1958) Hemiptera of Tristan da Cunha. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 5(43):1-8.

Christophersen, E. (1947) A short account of the expedition. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937--1938* 1: 1-24.

Clay, T. (1957) Mallophaga from Tristan da Cunha. Part 1. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 5(40):1-5.

Cleve-Euler, A. (1949) Littoral diatoms from Tristan da Cunha. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 3(18):1-30.

Collar, N. J., Crosby, M. J. and Stattersfield, A. J. (1994) *Birds to watch 2. The world List of Threatened Birds*. Cambridge, UK: BirdLife International (BirdLife Conservation Series No. 4).

Cooper, J. and Ryan, P. G. (1994) *Management plan for the Gough Island Wildlife Reserve*. Edinburgh, Tristan da Cunha: Government of Tristan da Cunha.

Cooper, J. and Ryan, P. G. (1995) Conservation status of Gough Island. Pp 71-84, in: P.R. Dingwall, ed. *Progress in the Conservation of the Subantarctic Islands*. Gland and Cambridge, UK: International Union for Conservation of Nature.

Cooper, J., Ryan, P. G. and Andrew, T. G. (1995) Conservation status of the Tristan da Cunha Islands. Pp 59-70, in: P.R. Dingwall, ed. *Progress in the Conservation of the Subantarctic Islands*. Gland and Cambridge, UK: International Union for Conservation of Nature.

Crafford, J.E. (1986) Entomological activities in Gough Island. *South African Scientific Committee for Antarctic Research (SASCAR) Newsletter* 21:10

Crawford, A. B. (1941) *I went to Tristan*. London: Hodder & Stoughton.

Crawford, A. B. (1982) *Tristan da Cunha and the Roaring Forties*. Edinburgh and London, UK: Charles Skilton Ltd. and Cape Town: David Philip.

Crawford, A. B. (1999) *Penguins, Potatoes & Postage Stamps---A Tristan da Cunha Chronicle*. Oswestry, UK: Anthony Nelson.

Cuthbert, R, Ryan, PG, Cooper, J, Hilton, G (2003) Demography and population trends of the Atlantic Yellow-nosed Albatross. *Condor* 105:439-52

Cuthbert, R (2004) Breeding biology of the Atlantic Petrel, *Pterodroma incerta*, and a population estimate of this and other burrowing petrels on Gough Island, South Atlantic Ocean. *Emu* 104:221-8.

Cuthbert, R, Sommer, E, Ryan, P, Cooper, J, Hilton, G (2004) Demography and conservation of the Tristan albatross *Diomedea[exulans] dabbenena*. *Biological Conservation* 117:471-81.

Cuthbert, R. and Hilton, G (2004) Introduced house mice *Mus musculus*: a significant predator of threatened and endemic birds on Gough Island, South Atlantic Ocean? *Biological Conservation* 117:483-9.

Cuthbert, R.J. and Sommer, E (2004). *Gough Island Bird Monitoring Manual*. RSPB Research Report 5. Sandy, U.K: Royal Society for the Protection of Birds.

Cuthbert, R.J. & Sommer, E.S. (2004). Population size and trends of four globally threatened seabirds. *Marine Ornithology* 32: 97-103.

Cuthbert, R.J., Phillips, R.A. & Ryan, P.G, (2003). Separating Tristan Albatrosses and Wandering Albatrosses using morphometric measurements. *Waterbirds* 26: 338-44.

Cuthbert, R.J., Hilton, G.M., Ryan, P.G. & Tuck, G. (2005). At-sea distribution of the Tristan Albatross *Diomedea dabbenena* and the relationship with pelagic longline fishing in the South Atlantic Ocean. *Biological Conservation* 121: 345-55.

De Meillon, B. (1952) The fleas of seabirds in the Southern Ocean. *Australian National Antarctic Expedition Report* B1:1-11.

Dell, R.K. (1964) Antarctic and sub-Antarctic Mollusca: Amphineura, Scaphopoda and Bivalvia. *Discovery Reports* 33:93-9;231-34.

Dunnet, G.M. (1964) Distribution and host relationships of fleas in the Antarctic and sub-Antarctic. *Biologie Antartique* 223-40.

- Elliott, H. F. I. (1953) The fauna of Tristan da Cunha. *Oryx* 2: 41--53.
- Elliott, H. F. I. (1957) A contribution to the ornithology of the Tristan da Cunha group. *Ibis* 99: 545-586.
- Elix, J.A., Gremmen, N.J.M. (2002) The lichen family Parmeliaceae (Ascomycotina) on Gough Island, South Atlantic Ocean. *Mycotaxon* 81:257-64.
- Fletcher, D.S. (1963) Macrolepidoptera collected by the Gough Island Scientific Survey 1955-56. *Proceedings of the Royal Entomological Society of London Series B* 32(1-2):17-19.
- Fraser, M. W. (1983) The Denstone Expedition to Inaccessible Island. *Cormorant* 11: 69-73.
- Fraser, M.W., Ryan, P.G. and Watkins, B.P. (1988) The seabirds of Inaccessible Island, South Atlantic Ocean. *Cormorant* 16: 7--33.
- Fraser, M. (1989) The Inaccessible Island Rail, smallest flightless bird in the world. *African Wildlife* 43: 14-19.
- Fraser, M. W. and Briggs, D. J. (1992) New information on the *Nesospiza* buntings at Inaccessible Island, Tristan da Cunha, and notes on their conservation. *Bulletin of the British Ornithological Club* 112: 12-22.
- Fraser, M. W., Dean, W. R. J. and Best, J. C. (1992) Observations on the Inaccessible Island Rail *Atlantisia rogersi*: the world's smallest flightless bird. *Bulletin of the British Ornithological Club* 112: 12-22.
- Fraser, M., Gilfillan, D., Hall, N., Holt, R., Mateer, N., Preece, R., Siddall, C., Swales, M., Woolley, J. and Dowsett, D. (1983) Pp. 1-60 in *Denstone Expedition to Inaccessible Island. Denstonian Supplement*. Uttoxeter: Denstone Expeditions Trust, Denstone College.
- Fraser, M.W., Ryan, P.G., Dean, W.R.J., Briggs, D.J. and Moloney, C.L. (1994) Biology of the Tristan Thrush *Nesocichla eremita*. *Ostrich* 65: 14-25.
- Freeman, P. (1962) Diptera Nematocera from Gough Island, South Atlantic. *Proceedings of the Royal Entomological Society of London Series B* 31:77-80.
- Frey, R. (1954) Diptera Brachycera und Sciaridae von Tristan da Cunha. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 4(26):1-55.
- Furness, R.W. and Palma, R.L. (1992) Phthiraptera of petrels and skuas from Gough Island, South Atlantic Ocean. *Seabird* 14:33-42.

- Gaston, K.J., Jones, A.G., Hanel, C. and Chown, S.L. (2003) Tristan Island: Rates of species introduction to a remote oceanic island. *Proceedings of the Royal Society of London, Series B: Biological Science* 270:1091-8.
- Gittenberger, E.; Groenenberg, D.S.J. & Preece, R.C. 2006. Molecular trails from hitchhiking snails. *Nature* 439: 409
- Glass, N., Lavarello, I., Glass, J. P. and Ryan, P. G. (2000) Longline fishing at Tristan da Cunha: impacts on seabirds. *Atlantic Seabirds* 2(2): 49-56.
- Hänel, C. & Palma, R.L. (in press). The lice of the Tristan da Cunha Archipelago (Insecta: Phthiraptera). *Beiträge zur Entomologie* 57(1).
- Hagen, Y. (1952) Birds of Tristan da Cunha. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937--1938* 20: 1--248.
- Helyer, P. and Swales, M. (1998) *Bibliography of Tristan da Cunha*. Oswestry, U.K: Anthony Nelson.
- Hill, D.S. (1961) Revision of the British species of *Ornithomyia* Latreille (Diptera Hippoboscidae). *Proceedings of the Royal Entomological Society London* B31 pts1-2:11-18.
- Hoberg, E.P. and Ryan, P.G. (1989) Ecology of helminth parasitism in *Puffinus gravis* (Procellariiformes) on the breeding grounds of Gough Island. *Canadian Journal of Zoology* 67:220-25.
- Hogewind, W.L. and Koen, H. (1967) *Heterocephalobus goughiensis* (Nematoda: Cephalobidae) from Gough Island. *Nematologica* 13:509-511.
- Holdgate, M. W. (1958) *Mountains in the sea. The story of the Gough Island Expedition*. London:Macmillan.
- Holdgate, M.W. (1960) The fauna of the mid-Atlantic islands. *Proceedings of the Linnean Society of London Series B* 152:550-567.
- Holdgate, M.W. (1961) The fresh water fauna of Gough Island (South Atlantic). *Proceedings of the Linnean Society of London* 1959-60 172(1):8-24.
- Holdgate, M. W. (1965) The fauna of the Tristan da Cunha islands. *Philosophical Transactions of the Royal Society of London. Series B, biological sciences* 249: 361-424.
- Holdgate, M.W. (1969) Biological work on Tristan da Cunha Island, Nightingale Island, Inaccessible Island and Gough Island, 1968. *Polar Record* 14(92):661-662.

Hydrographer of the Navy (1977) *Africa Pilot* Vol. 2. (12th edn), corrected to 29 April 1989. Taunton, U.K: Ministry of Defence.

Jeekal, C.A.W. (1954) Diplopoda of Tristan da Cunha. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 4(32):1-9.

Johnstone, G.W., Shaughnessy, P.D. and Conroy, J.W.H. (1976) Giant-petrels in the South Atlantic: new data from Gough Island. *South African Journal of Antarctic Research* 6: 19-22.

Jones, A.G., Chown, S.L., Gaston, K.J. (2002) Tristan Island: Terrestrial invertebrates of Gough Island: an assemblage under threat? *African Entomology* 10:83-91

Jones, A.G., Chown, S.L., Ryan, P.G., Gremmen, N.J.M. and Gaston, K.J. (2003) A review of conservation threats on Gough Island: a case study for terrestrial conservation in the Southern Oceans *Biological Conservation* 113:75-87.

Jones, A.G., Chown, S.L. and Gaston, K.J. (2003) Tristan Island: Introduced house mice as a conservation concern on Gough Island. *Biodiversity and Conservation* 12: 2107-19.

Jones, A.G., Chown, S.L. and Gaston, K.J. (2003) The free-living pterygote insects of Gough Island, South Atlantic Ocean. *Systematics and Biodiversity* 1(2):213-273.

Jones, A.G. (2004) *Insects of the Falkland Islands*. Falklands Conservation, London, UK. 32pp.

Jones, H.I. and Shellam, G.R. (1999) Blood parasites in penguins, and their potential impact on conservation. *Marine Ornithology* 27:181-184.

Jordan, H.E. (1954) Siphonaptera. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 4(30):1-2.

Klimaszewski, J., Maus, C and Gardiner, A (2002) The importance of tracking introduced species: new records of athetine rove beetles from South Atlantic Inaccessible Island (*Coleoptera, Staphylinidae, Aleocharinae*). *Coleopterists Bulletin* 56(4): 481-90.

Kuschel, G. (1962) The Curculionidae of Gough Island and the relationships of the weevil fauna of the Tristan da Cunha group. *Proceedings of the Linnean Society of London* 173(2):69-78.

Lambers, D. and Hille, R. (1955) Aphididae of Tristan da Cunha. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 4(34):1-5.

- Marshall, D.J. and Chown, S.L. (2003) Marine hyadesiid mites from Gough Island. *Hydrobiologia* 495:119-26.
- Millidge, A. F. 1985. Some Linyphiid Spiders from South America (Araneae, Linyphiidae). *American Museum Novitates* **2836**: 1-78.
- Morison, G. (1960) Thysanoptera of Tristan da Cunha. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 5(47):1-5.
- Odhner, N.H. (1960) Old and new species of Tristania. *Proceedings of the Malacological Society of London* 34:168-173.
- Oldroyd, H. (1958) Diptera-Cyclorrhapha from Gough Island, South Atlantic. *Proceedings of the Royal Entomological Society of London (A)*33(4/6):76-80.
- Olson, S. L. (1973) Evolution of the rails of the South Atlantic islands (*Aves: Rallidae*). *Smithsonian Contributions to Zoology* 152: 1-53.
- Pearman, J.V. (1958) Psocoptera. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 5(45):1-3.
- Preece, R.C., Gittenberger, E. (2003) Systematics, distribution and ecology of *Balea* (= *Tristania*) (*Pulmonata : Clausiliidae*) in the islands of the Tristan-Gough group. *Journal of Molluscan Studies* 69: 329-48.
- Preece, R.C. (2001) Tristan Island: Introduced land molluscs on the islands of the Tristan da Cunha - Gough group (South Atlantic) *Conchol* 37: 253-9.
- Quick, H.E. (1957) *Succinea flexilis* from Gough Island. *Proceedings of the Malacological Society of London* 32(5):203-6.
- Rapoport, E.H. (1970) Collembola of Tristan da Cunha, Nightingale and Inaccessible Islands. *Nytt Magasin foer Zoology (Oslo)* 18(1):23-32.
- Reyne, A. (1954) Scale insects (Coccoidea). *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 4(31):1-2.
- Reynolds, J.W., Jones, A.G., Gaston, K.J. and Cheown, S.L. (2002) The earthworms (Oligocheata:Lumbricidae) of Gough Island, South Atlantic Ocean. *Megadrilologica* 9(2):6-15.

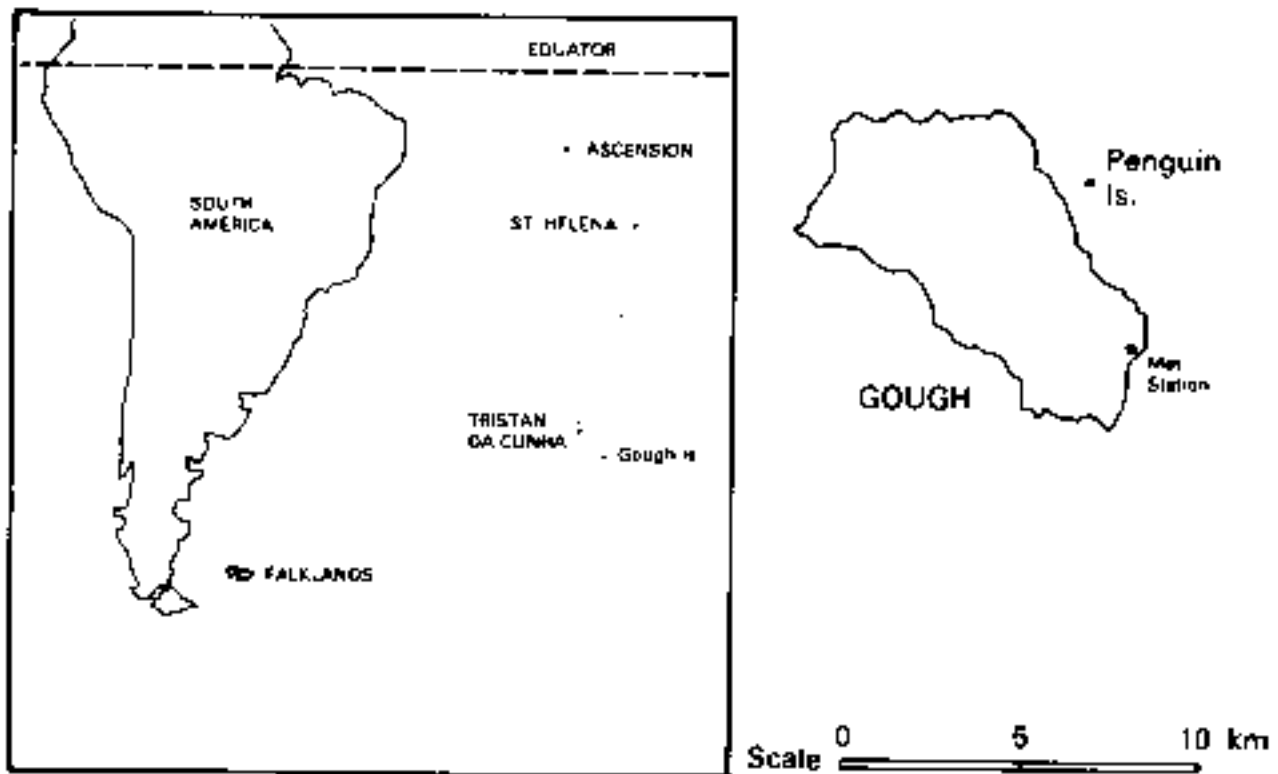
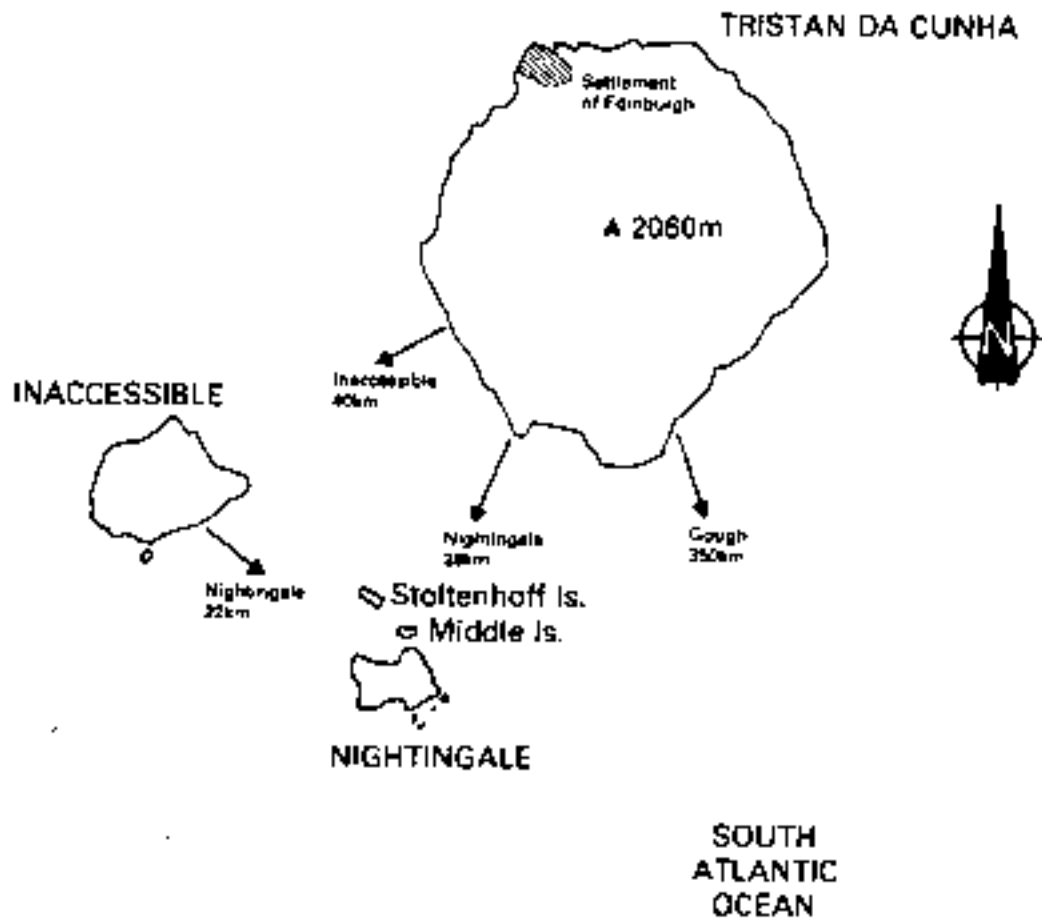
- Richardson, M. E. (1984) Aspects of the ornithology of the Tristan da Cunha group and Gough Island, 1972-1974. *Cormorant* 12: 122-201.
- Roux, J.P., Ryan, P.G., Milton, S.J. and Moloney, C.L. (1992) Vegetation and checklist of Inaccessible Island, central South Atlantic Ocean, with notes on Nightingale Island. *Bothalia* 22 (1): 93 – 109.
- Rowan, A. N., Elliott, H. F. I. and Rowan, M. K. (1951) The ‘spectacled’ form of the Shoemaker *Procellaria aequinoctialis* in the Tristan da Cunha group. *Ibis* 93: 169-174.
- Rowan, M. K. (1951) The Yellow-nosed Albatross *Diomedea chlororhynchos* Gmelin at its breeding grounds in the Tristan da Cunha group. *Ostrich* 22: 139-55.
- Rowan, M. K. (1952) The Greater Shearwater *Puffinus gravis* at its breeding ground. *Ibis* 94: 97--121.
- Rowlands, B. W. (1992) Seabird observations between Ascension, St Helena and Tristan da Cunha in the central South Atlantic. *Marine Ornithology* 20: 25-42.
- Rowlands, B. W. (1994) A seabirding cruise to Tristan da Cunha, 20 January to 2 February 1993. *Sea Swallow* 45: 64-8.
- Ryan, P.G. (1991) The impact of the commercial lobster fishery on seabirds at the Tristan da Cunha islands, South Atlantic. *Biological Conservation*. 57: 1-12.
- Ryan, P.G., Moloney, C.L. and Hudon, J. (1994) Color variation and hybridization among *Nesospiza* buntings on Inaccessible Island, Tristan da Cunha. *Auk* 111(2): 314-27.
- Ryan, P.G., Dean, W.R.J., Moloney, C.L., Watkins, B.P. and Milton, S.J. (1990) New information on seabirds at Inaccessible Island and other islands in the Tristan da Cunha group. *Marine Ornithology* 18: 43-54.
- Ryan, P. G. (1998) The taxonomic and conservation status of the Spectacled Petrel *Procellaria conspicillata*. *Bird Conservation International* 8: 223-35.
- Ryan, P. G. and Moloney, C. L. (2000) The status of Spectacled Petrels (*Procellaria conspicillata*) and other seabirds at Inaccessible Island. *Marine Ornithology* 28:93-100.
- Ryan, P.G. and Moloney, C.L. (2002) Breeding behaviour, clutch size and egg dimensions of *Neospiza* buntings at Inaccessible island, Tristan da Cunha. *Ostrich* 73:52.

- Ryan, P. G., Cooper, J. and Glass, J. P. (2001) Population status, breeding biology and conservation of the Tristan Albatross *Diomedea (exulans) dabbenena*. *Bird Conservation International* 11: 35-48.
- Ryan, P.G. (2001) Morphological heritability in a hybrid bunting complex: Nesospiza at inaccessible island *Condor* 103: 429-38.
- Ryan, P.G., and Glass, J.P. (2001) Inaccessible Island Nature Reserve Management Plan. Government of Tristan da Cunha, Edinburgh, Tristan da Cunha: Government of Tristan da Cunha.
- Ryan, P.G. (2006) Inaccessible Island Bird Monitoring Manual. RSPB Research Report No.16. Royal Society for the Protection of Birds, Sandy, Bedfordshire, UK.
- Stattersfield, A. J., Crosby, M. J. Long, A. J. and Wege, D. C. (1998) *Endemic bird areas of the world. Priorities for biodiversity conservation*. Cambridge, U.K.: BirdLife International.
- Swales, M. K. (1965) The sea-birds of Gough Island. *Ibis* 107: 17--42, 215-229.
- Swales, M. K. (1996) Tristan da Cunha. *Islander* 2: 2-4.
- Swales, M., Whirledge, C., Woolley, J. and Wright, S. (1993) Pp. I-32 in *Denstone Expedition to Inaccessible Island. Denstonian supplement*. Uttoxeter, U.K.: Denstone Expeditions Trust, Denstone College.
- Timmermann, G.A.F. (1957) Mallophaga from Tristan da Cunha. Part 2. Some remarks on the genus Longimenopon Thompson, 1948. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 5(41):7-12.
- Viette, P.E.L. (1952) Lepidoptera. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 3(23):1-19.
- Voison, J-F. (1981) Notes on insects of Tristan da Cunha and Gough Island. *Entomologist's Monthly Magazine* 116:253-55.
- Wace, N.M. (1968) Australian Red Back Spiders on Tristan da Cunha. *The Australian Journal of Science* 31(5):189.
- Wace, N. M. and Holdgate, M. W. (1976) Man and nature in the Tristan da Cunha islands. *International Union for the Conservation of Nature Monograph* 6: 1--114.
- Watkins, B. P. and Furness, R. W. (1986) Population status, breeding and conservation of the Gough Moorhen. *Ostrich* 57: 32-36.

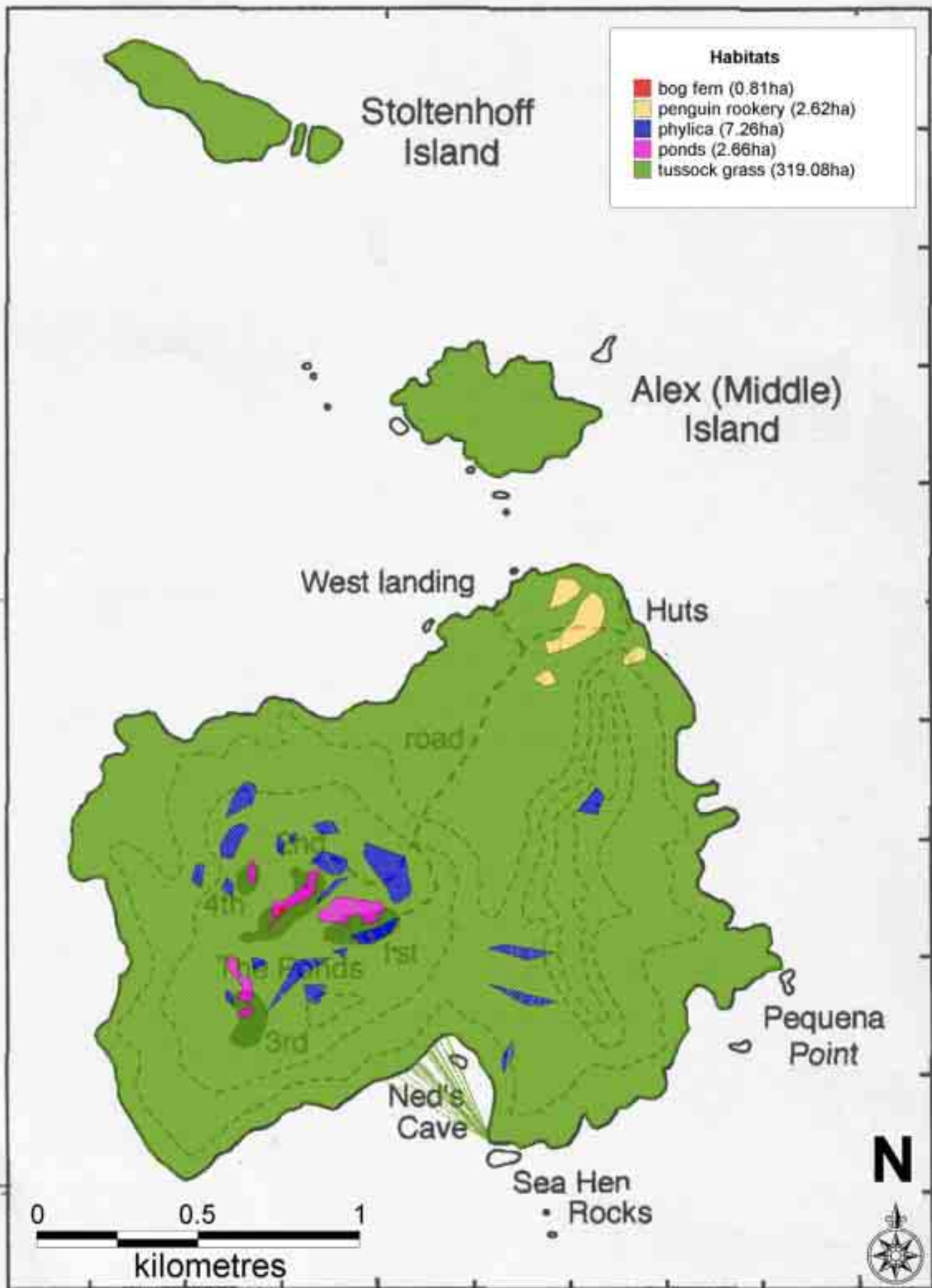
Willemse, C. (1954) Orthoptera (Suborder:Caelifera) Fam. Tridactylidae. *Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937-1938* 4(28):5-8.

Worsfold, T.M., Avern, G., and Ponder, W.F. (1993) Shallow water rissoiform gastropods from Tristan da Cunha, South Atlantic Ocean with records of species from Gough Island. *Zoologica Scripta* 22(2):153-166.

Annex 3a: Map of Tristan da Cunha group



Nightingale Island



Annex 4
Breeding Birds of the Tristan da Cunha Islands

English Name	Scientific Name	Tristan Name	IUCN Status (BirdLife International 2004)	Islands¹	Annual Population (breeding pairs)	Years in which data were gathered	Source
Northern rockhopper penguin	Eudyptes chrysocome moseleyi	Pinnamin	VU	T	3,860	2004	A. Rothwell (unpubl. data)
				N	125,000	1972-4	Richardson (1984)
				I	16,000 - 20,000	2004	Ryan (2006)
				G	30,000	2004	P. Ryan (unpubl. data)
Tristan albatross*	Diomedea dabbenena	Gony	EN	T	Extirpated	na	Hagan (1952) and Watkins (1987)
				I	0 - 2	1999-2004	Ryan et al. 2001 and Ryan (2006)
				G	1,500 - 2,400	1999-2001	Ryan et al. (2001) and Cuthbert et al. (2004)
				T	2,000 - 3,000	1972-4	Richardson (1984)
Sooty albatross*	Phoebastria fusca	Peeoo	EN	N	100 - 200	1972-4	Richardson (1984)
				I	500	2004	Ryan (2006)
				G	5,000	2000-1	Cuthbert & Sommer (2004)
Atlantic yellow-	Thalassarche	Molly	EN	T	16,000 - 30,000	1972-4	Richardson (1984)

¹ The four islands in the Tristan group are Tristan (T), Nightingale (N), which includes the Middle and Stoltenhoff Islets, Inaccessible (I) and Gough (G)

nosed albatross	chlororhynchos					N	4,500	1972-4	Richardson (1984)
						I	2,000	2004	Ryan (2006)
						G	5,250	2000-1	Cuthbert & Sommer (2004)
Southern giant - petrel	Macronectes giganteus	Stinker, Nellie, Boneshaker	VU			T	Extirpated	na	Hagan (1952) and Johnstone et al. (1976)
						G	222 – 236	2005	R.Cuthbert, H. Burle, E. Sommer & J. Wilson (unpubl. data)
Broad-billed prion	Pachyptila vittata	Nightbird	LC			T	1,000 – 10,000	1972-4	Richardson (1984)
						N	10,000 – 100,000	1972-4	Richardson (1984)
						I	50,000 – 500,000	1982-7	Fraser et al. (1988)
						G	1,750,000	2000-1	Cuthbert (2004)
Kerguelen petrel	Lugensa brevirostris	Blue Nighthawk	LC			T	unknown	1972-4	Richardson (1984)
						I	50 - 500	1982-7	Fraser et al. (1988)
						G	>50,000	2000-1	Cuthbert & Sommer (2003)
Soft-plumaged petrel	Pterodroma mollis	Littlest Whitebreast, Whistler	LC			T	100 – 500	1972-4	Richardson (1984)
						N	100 - 1,000	1972-4	Richardson (1984)
						I	10,000 - 100,000	1999	Ryan and Moloney (2000)
						G	400,000	2000-1	Cuthbert (2004)
Atlantic petrel	Pterodroma incerta	White-breasted Black Haglet	VU			T	100 - 200	1972-4	Richardson (1984)
						I	May breed	1982-7	Fraser et al. (1988)
						G	1,800,000	2000-1	Cuthbert (2004)
Great-winged petrel	Pterodroma macroptera	Black Haglet	LC			T	1,000 – 3,000	1972-4	Richardson (1984)
						I	May breed	1982-7	Fraser et al. (1988)

							G	> 10,000	2000-1	Cuthbert & Sommer (2003)
Spectacled petrel	<i>Procellaria conspicillata</i>	Ringeye	CR			I	I	10,000	2004	Ryan et al. to be published in 2006
Grey petrel	<i>Procellaria cinerea</i>	Peduncle	NT			T	T	50 - 100	1972-4	Richardson (1984)
						I	I	Probably breeds	1982-7	Fraser et al. (1988)
						G	G	>10,000	2000-1	Cuthbert & Sommer (2003).
Great shearwater	<i>Puffinus gravis</i>	Petrel	LC			T	T	<10		Ryan et al. (1990)
						N	N	3,000,000	1988-90	Ryan et al. (1990)
						I	I	>2,000,000	1999	Ryan & Moloney (2000)
Sooty shearwater	<i>Puffinus griseus</i>		NT			G	G	980,000	2000-1	Cuthbert (2004)
						T	T	<10	1985-1990	Ryan et al. (1990)
						I	I	May breed	1982-7	Fraser et al (1988)
Little shearwater	<i>Puffinus assimilis</i>	Whistler, Nighthawk	LC			T	T	Possibly breeds	1972-4	Richardson (1984)
						N	N	100-1,000	1972-4	Richardson (1984)
						I	I	5,000 - 50,000	1982-7	Fraser et al. (1988)
						G	G	>5,000	2000-1	Cuthbert & Sommer (2003)
Grey-backed storm-petrel	<i>Garrodia nereis</i>		LC			G	G	1,000 - 10,000	1972-4	Richardson (1984)
White-faced storm-petrel	<i>Pelagodroma marina</i>	Skipjack	LC			N	N	1,000 - 10,000	1972-4	Richardson (1984)
						I	I	5,000 - 50,000	1982-87	Fraser et al. (1988)
						G	G	>10,000	1980s	J. Cooper & P. Ryan (Fitzpatrick Institute Unpubl. data)
White-bellied	<i>Fregetta</i>	Stormpigeon	LC			N	N	100 - 1,000	1972-4	Richardson (1984)

storm-petrel	grallaria			I	50,000 – 500,000	1999	Ryan & Moloney (2000)
				G	>10,000	1980s	J. Cooper & P. Ryan (Fitzpatrick Institute Unpubl. data)
Common diving-petrel	Pelecanoides urinatrix	Flying Pinnamin	LC	N	10,000 – 100,000	1972-4	Richardson (1984)
				I	5,000 – 50,000	1999	Ryan & Moloney (2000)
				G	> 20,000	1980s	J. Cooper & P. Ryan (Fitzpatrick Institute Unpubl. data)
Inaccessible rail	Atlantasia rogersi	Little Island Cock	VU	I	4,200	1982-3	Fraser et al. (1992)
Gough moorhen	Gallinula comeri	Island Cock	VU	T	2,000	1993	Unknown
				G	3,500 – 4,250	2000-1	Cuthbert & Sommer (2003)
Tristan moorhen	Gallinula nesiotis	Island Cock	EX	T	extinct		Beintema (1972)
Antarctic tern	Sterna vittata	Kingbird	LC	T	50 - 70	1972-4	Richardson (1984)
				N	100 - 300	1972-4	Richardson (1984)
				I	100	1999	Ryan & Moloney (2000)
				G	500	2000-1	Cuthbert & Sommer (2003)
Brown noddy	Anous stolidus	Woodpigeon	LC	T	30 - 50	1972-4	Richardson (1984)
				N	200 - 500	1972-4	Richardson (1984)
				I	50 - 100	1999	Ryan & Moloney (2000)
				G	200	2000-1	Cuthbert & Sommer (2003)
Southern (Tristan)	Catharacta	Seahen	LC	T	5 - 10	1972 - 4	Richardson (1984)

skua	antarctica hamiltoni				N	100 - 500	1972 - 4	Richardson (1984)
						100	1999	Ryan & Moloney (2000)
Tristan thrush	Nesocichla eremita eremita Nesocichla eremita procax Nesocichla eremita gordoni	Starchy	NT		G	1,000	2000-1	Cuthbert & Sommer (2003)
					T	50 - 80	2004	A. Rothwell (unpubl. data)
					N	300 - 500	1972-4	Richardson (1984)
					I	850	1982-90	Fraser et al. (1994)
Tristan bunting	Nesospiza acunhae questi Nesospiza acunhae acunhae	Canary	VU		N	5,000	1990	P. Ryan (unpubl. data)
					I	10,000	1989-90 1999-2000	P. Ryan (unpubl. data)
Wilkins' bunting (or Grosbeak bunting)	Nesospiza wilkinsi wilkinsi Nesospiza wilkinsi dunnei	Big Canary	VU		N	50	1990	P. Ryan (unpubl. data)
					I	2,000	1989-90 1999-2000	P. Ryan (unpubl. data)
Gough bunting	Rowetta goughensis	Canary	VU		G	700 – 1,000	2000-1	Cuthbert & Sommer (2003)

* Breeds Biennially

Annex 5

Tristan da Cunha Mammal list

Breeding native mammals

Subantarctic Fur Seal *Arctocephalus tropicalis*

Elephant seal *Mirounga leonina*

Breeding non-native mammals

House mice *Mus musculus*

Black rat *Rattus rattus*

Domestic pets and livestock

Cows 700

Sheep 3,000

Pigs 14

Dogs 80

Donkeys 6

Hens 600

Geese 6

Ducks 350

Annex 6a

Indigenous Plants of the Tristan and Nightingale Islands

extracted from flora of sub-Antarctic, Antarctic and southern cold temperate regions database (under development)

Family	Species	Tristan	Nightingale
Pteridophyta (Ferns and Club Mosses)			
Adiantaceae	<i>Adiantum poiretii</i>	X	X
Aspidiaceae	<i>Dryopteris aquilina</i>	X	X
	<i>Polystichum mohrioides</i>	X	
	<i>Rumohra adianthiformis</i>	X	
Aspleniaceae	<i>Asplenium alvaradense</i>	X	
	<i>Asplenium erectum</i>	X	X
	<i>Asplenium monanthes</i>	X	
	<i>Asplenium obtusatum</i>	X	X
	<i>Asplenium platybasis</i>		X
	<i>Gymnogramma cheilanthoides</i>	X	
Adiantaceae	<i>Eriosorus cheilanthoides</i>	X	
Athyriaceae	<i>Athyrium medium</i>	X	
Blechnaceae	<i>Blechnum australe</i>	X	X
	<i>Blechnum palmiforme</i> (Bogfern)	X	X
	<i>Blechnum penna-marina</i>	X	X
Dennstaedtiaceae	<i>Hypolepis rugosula</i>	X	X
Grammitaceae	<i>Grammitis magellanica</i>	X	X
	<i>Grammitis poeppigiana</i>	X	X
Hymenophyllaceae	<i>Hymenophyllum aeruginosum</i>	X	X
	<i>Hymenophyllum peltatum</i>	X	
	<i>Hymenophyllum tunbridgense</i>	X	
	<i>Trichomanes angustatum</i>	X	
Lycopodiaceae	<i>Huperzia insularis</i>	X	X
	<i>Lycopodium diaphanum</i>	X	
	<i>Lycopodium magellanicum</i>	X	
Ophioglossaceae	<i>Ophioglossum opacum</i>	X	X
Polypodiaceae	<i>Elaphoglossum campylolepium</i>		X
	<i>Elaphoglossum hybridum</i>	X	
	<i>Elaphoglossum insulare</i>	X	
	<i>Elaphoglossum laurifolium</i>	X	X
	<i>Elaphoglossum obtusatum</i>	X	
	<i>Elaphoglossum succisifolium</i>	X	X
Pteridaceae	<i>Histiopteris incisa</i>	X	X
Thelypteridaceae	<i>Thelypteris tomentosa</i>	X	X
Vittarioideae??	<i>Vittaria vittarioides</i>	X	X
Spermatophyta (Seed-bearing plants)			
Dicotyledones			
Chenopodiaceae	<i>Atriplex plebeia</i>	X	X

	<i>Chenopodium ambrosioides</i>	X	X
Compositae	<i>Chevreulia sarmentosa</i>	X	
	<i>Gnaphalium thouarsii</i> (Cow pudding grass)	X	X
	<i>Lagenophora nudicaulis</i>	X	
Convolvulaceae	<i>Calystegia sepium</i>	X	
	<i>Calystegia soldanella</i>	X	
Cruciferae	<i>Cardamine propinqua</i>	X	
Empetraceae	<i>Empetrum rubrum</i> (Berry bush)	X	X
Geraniaceae	<i>Pelargonium acugnaticum</i>	X	
Polygonaceae	<i>Rumex frutescens</i> (Pig dock)	X	
Ranunculaceae	<i>Ranunculus caroli</i>	X	X
Rhamnaceae	<i>Phylica arborea</i> (Island tree)	X	X
Rosaceae	<i>Acaena sarmentosa</i> (Dogcatcher)	X	X
	<i>Acaena stangii</i>	X	
Rubiaceae	<i>Nertera assurgens</i>	X	
	<i>Nertera depressa</i> (Hen berry)	X	X
	<i>Nertera holmboei</i>		X
Umbelliferae	<i>Apium australe</i> (Celery)	X	X
	<i>Hydrocotyle capitata</i>	X	
Monocotyledones			
Cyperaceae	<i>Carex insularis</i>	X	X
	<i>Carex thouarsii</i>	X	X
	<i>Scirpus bicolor</i>	X	X
	<i>Scirpus cernuus</i>	X	
	<i>Scirpus sulcatus</i>	X	X
	<i>Scirpus verruculosus</i>	X	
	<i>Uncinia brevicaulis</i>	X	X
	<i>Uncinia compacta</i>	X	
	<i>Uncinia meridensis</i>	X	
Gramineae	<i>Agrostis carmichaelii</i>	X	
	<i>Agrostis holgateana</i>	X	
	<i>Agrostis magellanica</i>	X	
	<i>Agrostis media</i>	X	
	<i>Agrostis trachychlaena</i>		X
	<i>Agrostis wacei</i>	X	
	<i>Calamagrostis deschampsiiiformis</i>	X	
	<i>Deschampsia christophersenii</i>	X	
	<i>Deschampsia Mejlundii</i>	X	
	<i>Festuca spec.</i>	X	
	<i>Glyceria insularis</i>	X	
	<i>Poa flabellata</i>	X	X
	<i>Polypogon intermedius</i>	X	
	<i>Spartina arundinacea</i> (Tussock grass)	X	X
	<i>Rostkovia tristanensis</i>	X	

Annex 6b Introduced plant species of Tristan da Cunha

This list is not exhaustive and does not include species that are confined to the garden areas of the settlement.

Species	Present on which islands	Status and distribution
<i>Pinus caribea</i> (Christmas tree)	T, I	Present and spreading at the plantation at Sandy Point, Tristan Trees at Waterfall on Inaccessible produce no seedlings
<i>Eucalyptus spp.</i>	T	Form part of the plantation at Sandy Point
<i>Mariscus congestus</i> (Old bull grass)	T, I, N	Common on settlement plain
<i>Phormium tenax</i> (Flax)	T, I, N	Used as hedging plant in Edinburgh settlement. A few plants outwith this area. Localised on Inaccessible and Nightingale.
<i>Agrostis gigantea</i>	T, I, N	Common on lowland grassland. Restricted distribution on Inaccessible and Nightingale
<i>Agrostis stolonifera</i>	T, I, G	Common on lowland grassland on Tristan.
<i>Aira caryophyllea</i>	T, I, N	Wide distribution through islands – occurring patchily
<i>Cynodon dactylon</i>	T, I	Restricted to settlement area on Tristan and waterfall area on Inaccessible
<i>Holcus lanatus</i> (Farm grass)	T, I, N, G	Widespread and common, forming single species stands in areas favoured by sheep
<i>Poa annua</i>	T, I, N, G	Fairly common, in higher areas particularly bird-disturbed areas
<i>Vulpia bromoides</i>	T, I	Fairly common in isolated patches
<i>Centella asiatica</i>	T	
<i>Conyza albida</i>	T, I, N	Locally common, particularly on land slips
<i>Pseudognaphalium luteoalbum</i> (Muckweed)	T, I	Locally fairly common
<i>Sonchus oleraceus</i> (Sow thistle)	T, I, N, G	Common on the settlement plain
<i>Brassica rapa</i> (Rape seed)	T, I	Restricted to patches on settlement plain and a small area on Inaccessible
<i>Raphanus sativus</i>	T, I	
<i>Cerastium fontanum</i>	T, I	Fairly common
<i>Oxalis corniculata</i>	T, I, N	Localised
<i>Plantago major</i>	T, I, N	Very common and widespread
<i>Rumex acetosella</i> (Sorrel dock, sour grass)	T, I, N	Common and widespread on the Tristan base, localised on Inaccessible and Nightingale
<i>Rumex obtusifolius</i>	T, I, N, G	Widespread and common

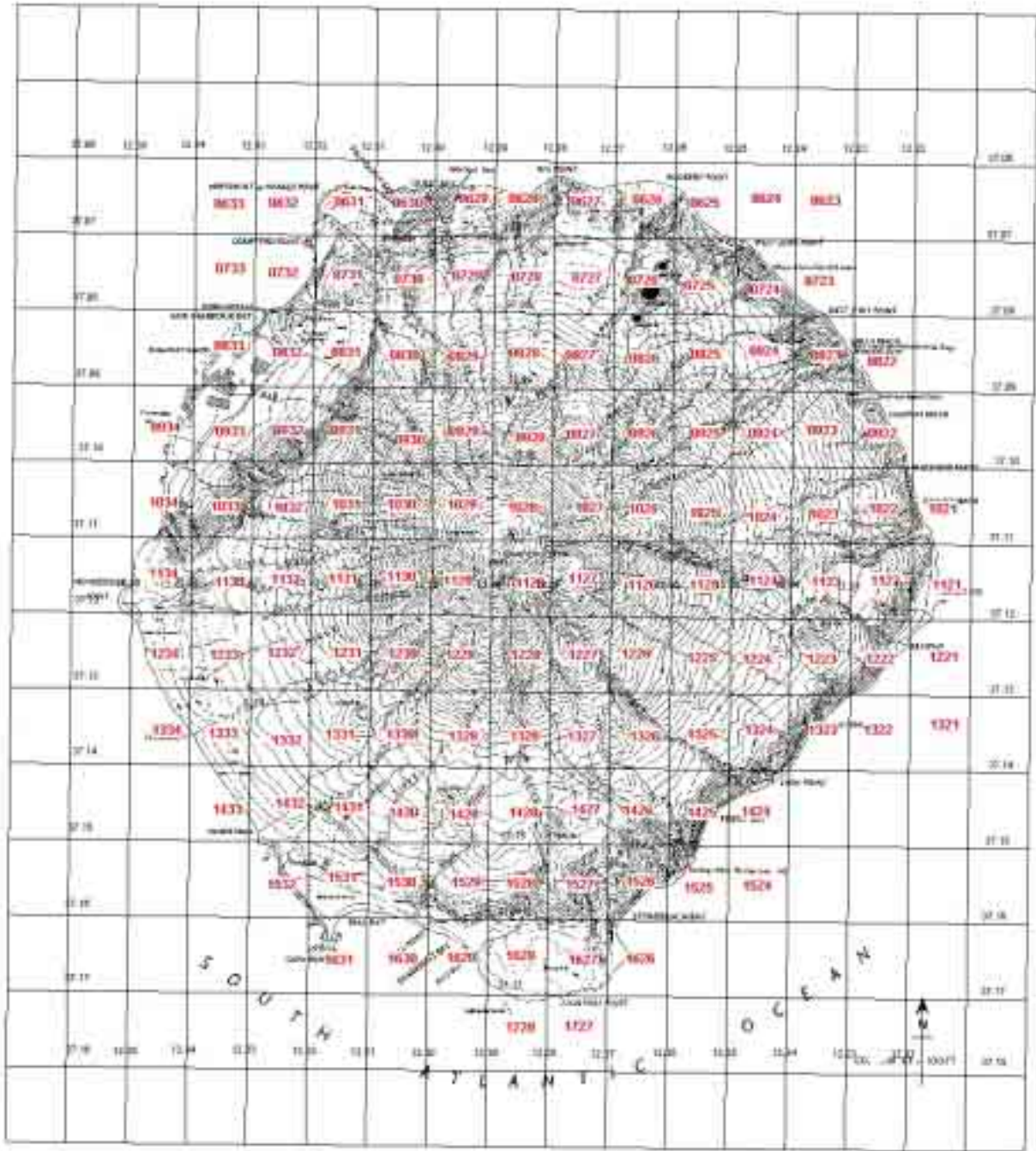
(Dock)		
<i>Malus domestica</i> (Apple tree)	T, I, N	Several locations on all three islands
<i>Salix babylonica</i> (Willowtree)	T	Several locations on Tristan, one location on Inaccessible
Species	Present on which islands	Status and distribution
<i>Veronica serpyllifolia</i>	T, I	Fairly common, particularly on disturbed ground
<i>Physalis peruviana</i>	I?	Probably extinct
<i>Solanum nigrum</i> (blackberry)	T, I	Common around settlement, localised on Inaccessible
<i>Solanum tuberosum</i> (potato)	T, I, G	In patches on the settlement plain, in the area by the hut on Inaccessible and by the Met station on Gough
Kikuyu grass (Scientific name is still being verified)	T	Spreading from fields next to settlement throughout gardens and the coastal plain
<i>Sagina procumbens</i>	T, G	Spreading along the settlement plain from the village, subject to an eradication programme on Gough
<i>Stellaria media</i>	T, G	Fairly common
<i>Convolvulus arvensis</i>	T	Introduced recently and spreading from settlement
<i>Fumaria officinalis</i>	T	Common around potato patches
<i>Atropa belladonna</i>	T	Common on settlement plain
Couch grass (Scientific name is still being verified)	T	Common on agricultural land
<i>Cirsium vulgare</i>	T	Common on the settlement plain
Milkweed (Scientific name is still being verified)	T	Common in the potato patches, particularly when soil is disturbed
<i>Sporobolus capensis</i>	T, I	

Annex 7

Socio-economic data

People	Population	273
	Age Structure	0-14 = 36 15-64 = 169 65+ = 66
	Birth rate	2 per year over 10 years
	Death rate	2.8 per year over 10 years
	Males	128
	Females	165
	Economy	Electricity Production
	Water Supply	Underground springs, not treated
	Agricultural Products	Crayfish
	Industry	Handicrafts, philately, tourism
Transport	Port	Calshott Harbour
	Roads	4 km paved, 10 km unpaved
	Cars	55
Infrastructure	Housing	127
	School	1
	Hospital	1
	Shop	1

Annex 8a Fixed Point Photography Habitat Map
 These can be repeated in future years to monitor long-term changes.



1. Bogfern Habitat (*Blechnum palmiforme*): photos taken at waypoint P1328 which is in square 1328 eg P1328B_N.JPG



2. Phyllica Habitat (*Phyllica arborea*): photos taken at waypoint P1122E which is in square 1122 eg P1122E_W.JPG

Annex 8b

Protocol for Habitat Monitoring

Photographs were taken at regular intervals according to the grid system below; these usually comprise wide-angle shots taken from a single point in several directions and a close-up of the immediate vegetation. Each photographic location was recorded with the GPS and the file name of each photograph, which incorporates details of its location and direction taken as detailed below. These photographs form the basis of a fixed-point photographic record that should be repeated every 5 years to help monitor long-term changes.

Grid System Adopted On Tristan Da Cunha

Grid System

The digital map has been overlaid with a grid at intervals of .01 degrees of latitude and longitude, and each square in this grid is identified with a unique four-figure number which is derived from its position in the grid e.g. the square whose upper right hand corner is located at 37.11 degrees south, 12.32 degrees west is labelled 11.32. (Note: Mapinfo requires positional information to be recorded using this position format) Waypoint names and photographic file names incorporate this grid reference which makes it easy to determine which area they refer to.

Naming GPS Waypoints

Waypoint names must be no more than 6 characters long if they are to be reloaded back into the GPS from a computer. Each waypoint name should be unique, and its ease of use is enhanced if the name incorporates some useful information rather than random characters.

A naming protocol for GPS waypoints has been devised as follows:

First character = type of position. P=photograph(s), G=gulch, Y=yellow-nose albatross nest, S=sooty albatross nest, W=general waypoint. These are also listed in order of rank ie a gulch waypoint which has associated photographs will be recorded as a 'P' waypoint rather than 'G'. The Excel file summarising the data records has a description of each waypoint and/or photograph.

Second to fifth characters = grid reference e.g.1332

Last character = identifier (A to Z, omitting letters I and O). This gives each point a unique reference.

Examples:

G1328A – a waypoint depicting the position of a gulch located in square 1328

G1328B – a different waypoint depicting the position of a gulch in square 1328

P1227C – a waypoint showing where photograph(s) were taken in square 1227.

Naming Photographs

Each photograph has been given a file name, which incorporates the waypoint name followed by one or more descriptive characters

Examples:

P1627A_1 = a photo taken at waypoint P1627A.

P1627A_2 = the second photo taken at waypoint P1627A

P1032A_N = a photo taken at waypoint P1032A looking north.

P1033D_NE = a photo taken at waypoint P1033D looking north-east

P1628A_CU = a close-up photo taken at waypoint P1628A

Using this system it is possible to quickly locate photographs taken from a position shown on the map without having to look up the details of which photos were taken at this location.

Annex 8c

Monitoring Manual for the Wildlife of Tristan and Nightingale Islands

Erica S. Sommer
Royal Society for the Protection of Birds

This manual was written in order to provide guidance to the newly appointed Conservation Officer of Tristan da Cunha. It is hoped that with the post of Conservation Officer now being a full-time position, constant and consistent long-term monitoring will be possible.

Input for the monitoring programmes was made by John Cooper, Richard Cuthbert, Geoff Hilton, and Peter Ryan. Simon Glass and James Glass verified that the proposed monitoring should be realistic to carry out as long as funding continues.

Any questions regarding this manual, or any problems encountered while carrying out the monitoring should be addressed to Erica Sommer (essommer@yahoo.com) and Geoff Hilton (geoff.hilton@rspb.org.uk).

Atlantic yellow-nosed albatross, *Thalassarche chlororhynchos*

Yellow-nosed albatross return to their breeding colonies in August. They will spend a few weeks to a month preparing their nest (either building a new one or refurbishing an existing nest). In general, albatrosses mate for life, although yellow-nosed aren't quite as monogamous as some other species. Before they start the breeding season they re-establish their pair bonds by spending time together at their nest site. After the egg is laid both birds will take turns incubating it. Incubation shift lengths vary from about 3-10 days. If regular visits are made to the colony during incubation (i.e. at least once every two weeks) then it is likely that both birds at each nest can be identified from their rings.

Yellow-nosed albatross are monitored at three sites: Hottentot study area, Tristan ponds, and Nightingale ponds. The Hottentot study area will be the most intensively studied and the data you collect will allow us to monitor breeding success, adult survival, juvenile recruitment, and population changes. The Tristan Ponds site will be monitored for breeding success, and population changes. At Nightingale we will be monitoring breeding success, population changes, adult survival, and juvenile recruitment.

Monitoring

Hottentot study area

This area is located between Hottentot Gulch and Caves Gulch. Everything between these gulches is in the study area and nests can be found right up until the bogfern/pasture boundary.

After egg-laying has begun in late September make your first visit to the colony. Thoroughly and systematically search the whole area for nests and ringed birds. In order to thoroughly cover the area it is best to divide the colony in half and spend a whole day searching each section. All birds seen should be checked for rings, and rings should be read when possible. All nests with an egg should be given a unique number (the next available in sequence), marked with a plastic pole and a GPS location should be recorded. Record all the necessary information for each nest following the guidelines given below. If you find an incubating bird without a ring, remove it from the nest and put a metal ring on the **right** leg, and a plastic alpha numeric ring on its left leg. If an incubating bird only has a metal ring, remove it from the nest and put a plastic ring on its other leg.

If a previously marked nest is inactive, do not remove the pole immediately. Wait until the nest has disintegrated (this might be after a few seasons). You can then use the pole at a different nest, but change the number.

Continue visiting the colony at least once every 2 weeks throughout incubation and hatching. Although you can cover the whole colony in one day after the initial check, continue to check for nests that you might have missed on earlier visits. Once all the eggs have hatched and both birds from each nest have been identified, you can visit the colony less frequently. Make sure you check all nests at least once in February and

then in early March. Ring the chicks when they are nearly ready to fledge (mid-March). Chicks should be ringed on their **left** leg; only put metal rings on them. If it is possible to do more frequent checks in January and February then do so. During chick rearing there are more non-breeding birds attending the colony and it is important to read their rings. In the first ten years of this study, this time of the year is when you're most likely to find the birds that you ringed as chicks.

(The reason for ringing adults and chicks on different legs is that chicks are known-age birds, whereas birds ringed as adults are of unknown age. By ringing them on different legs you can tell from a distance if the bird is a known-age or unknown age bird.)

Do a final check just after you think the chicks have fledged. If any chicks are found dead, remove the band and don't forget to record this on the SAFRING schedule.

Every time you visit the colony you should be checking all birds for rings. Try to put colour rings on any adult you find with a ring; this way they will be less disturbed in the future.

Set up your notebook as follows:

“Hottentot Yellow-nosed colony”, and the date should be recorded at the top of the page.

Nest	Contents	Ring #	Retrap/New	Location	Waypoint	Comments
34	B and E	876543/ A50	New	37.45678 12.34566	22	Bird didn't return to nest immediately; recaptured and released
Loafing	--	823456/ A23	Retrap	--	--	New plastic ring
23	empty	A 15	Retrap			

(in the above examples, nest 34 is a new nest and the bird didn't have rings; the second record was a bird by itself not at a nest, and it was given a plastic ring; the last record is of a previously marked nest and the bird had a plastic ring).

How to record data:

Nest – if it's a new nest try to use the next number in sequence; if the bird is not at a nest, record it as “loafing”.

Contents- (parent) **Bird and Egg** , (parent) **Bird and Pipped Egg**, (parent) **Bird and Chick**, **Chick**, **Dead Chick**, **Empty**; if the bird is not at a nest, just put a “--“ in this column.

Ring # - if the bird has a plastic ring, record this number (and letter) only; if you're putting a new ring(s) on the bird, record both ring numbers.

Retrap/New- if you're reading an existing ring it's "Retrap", if you're putting a new metal ring on it's "New"; if the bird already has a metal ring and you're adding a plastic ring only, the bird is a "Retrap".

Location- if it's a new nest record the latitude and longitude from the GPS; if the nest was already marked you don't need a location just record "--"; loafing birds do not need a location.

Waypoint- if it's a new nest record the name of the waypoint; if the nest was already marked just record "--"; loafing birds do not need a waypoint.

Comments- here's where you can record any other information you might have

Things to note:

- ⚡ If a bird is very nervous or "twitchy" (e.g. if it ran away when released and needed to be re-caught and released)
- ⚡ If anything went wrong when checking the nest (e.g. if the egg broke when the bird got back on nest)
- ⚡ If two birds are present at a nest, record which one was incubating and which one was sitting alongside
- ⚡ If there's a failed nest, any additional comments such as if the eggshell is scattered around a larger area, if there is still yolk in the egg, if there is chick down, etc.

Tristan Ponds

This area is located North and Northwest of Bottom Pond.

This study area should only be visited two times during the breeding season. Soon after egg-laying has stopped (early October) count all incubating adults. Check all birds for rings, but do not ring any new birds. Nests in this area will not be permanently marked, but you may use a bit of agricultural marker or spray paint to mark the vegetation near the nests that you've already counted (to ensure that you don't count a nest more than once). Make sure you thoroughly search the area so no nests are missed. Also count all nests which have already had egg failures (make sure you only count those from the present season; if you're not sure if it's old or not, don't count it).

When the chicks are big and are losing their down (mid-March), do a chick count. Make sure dead chicks are counted too, but record them separately.

Nightingale Ponds:

Two trips to Nightingale should be made each breeding season. The first visit should be early in incubation, but after all eggs have been laid. The boundaries of all four ponds are marked with plastic poles. Pond 1 is the first pond encountered when walking up the West Road (this is opposite from old maps of Nightingale). Count all incubating birds within the poled area. Only count nests that are completely within the

area; if the nest is on the boundary, with part of the nest outside, do not count it. Check all birds for rings, but do not ring any new birds at this stage. Also note any nests with failed eggs from this season.

After all the ponds have been counted, ring approximately 100 incubating adults in pond 2 (within the marked boundary). Adults should be ringed with a metal ring on their **right** leg. Do not put plastic rings on the Nightingale birds.

The second trip should be made before chicks start fledging (aim for mid-late February). On this visit count all the chicks in each pond, using the marked boundaries. Also count all dead chicks. After all four ponds have been counted aim to ring about 200 chicks in pond 2 (within the marked boundary). Chicks should be banded on their **left** leg. Do not put plastic rings on the Nightingale birds.

How to handle the birds

Yellow-nosed albatrosses can get very nervous when approached by people. Always take note of the birds' behaviour as you approach the nest. If it starts to back off the nest, take a few steps back and wait for the bird to resettle on the nest (they usually do). Often you can read the ring number without grabbing the bird. If this doesn't work (because the bird is going to bite you or if it's getting very agitated), carefully grab the bird's beak and read the ring number. Usually you can read the ring while it's still on the nest. Before you let go of the beak make sure it's not struggling too much (you don't want it to fall off the nest when you release it nor do you want it to crush down on the egg!). Very rarely you might need to take the bird off the nest to read the ring.

If the bird doesn't have a ring then have one person grab the bird by the beak with one hand and with the other pick it up from the nest. Make sure the wings are properly folded in, and that the egg doesn't get kicked out of the nest. The second person should cover the egg or small chick with a hat. Step away from the nest so that if you accidentally drop the ringing pliers or anything else, the egg or chick doesn't get harmed. Adults should be metal ringed on their right leg, and the ring should be applied so that when the bird is standing the numbers are right-side up. Make sure that the bird's leg is always held while applying the ring, and do not hold it out to the side of the bird (it should only be held in the bird's normal movement range; straight back in line with the tail, or straight down).

Use band stretchers (for agricultural use) to apply a plastic ring to the leg without the metal ring. The plastic rings are brittle when cold. Try to keep them warm by carrying them in an inside jacket pocket; stretch them just a little bit before applying them to the bird. Make sure you record all broken or lost rings.

When you're finished, the ringer should remove the hat from the egg and move away from the nest. Release the bird close to the nest, but not on it. Make sure the bird is facing the nest, and that it isn't struggling too much when it's released. If the bird immediately turns away from the nest and starts walking away you must interfere so that it doesn't fly off. Sometimes you might be able to 'shepherd' the bird to turn back to the nest, but if this doesn't work you must catch and release it again. Often you can release it in a spot where the only way it can walk away from the nest is by passing

you or the other person (this is often the case in the gullies or in the dense bogfern), which it will not want to do. Don't leave the area until the bird is back on the nest.

Some important Don'ts:

- ⚡ Don't pick up a bird by its wing
- ⚡ Don't hold a bird by its neck without supporting the rest of its body
- ⚡ Don't ring a bird when it's struggling; wait for it to stop and then continue

What you need:

Hottentot:

Ringling pliers
Pliers for plastic rings-spreaders work
Rings- metal and plastic alpha-numeric
Marker poles
Binoculars (big ones- to read alpha numeric rings from a distance)
Permanent marker pen
GPS
Notebook and pencils
Map of previously marked nests

Tristan Ponds:

Notebook and pencils
Agricultural marker or spraypaint

Nightingale:

Ringling pliers
Rings
Notebook and pencils

Storing the data:

Consult the document entitled "Managing YN data" for details on how to store data.

Sooty albatross, *Phoebastria fusca*

Sooty albatrosses build their mud nests on ledges on steep, vegetated slopes. On Tristan this usually means the sides of gulches and gullies, or on the edge of the base. Usually they'll nest in small colonies, with several nests found in an area, but this isn't always the case. Their dark colour makes them hard to spot sometimes, but their scream-like call is hard to miss.

Monitoring

No large group of nesting birds has been found within easy walking distance from the settlement, and therefore there are currently no established monitoring plots. However, as anecdotal evidence seems to indicate that they're less numerous than in the past, it is important to monitor their population the best that you can.

In order to do this keep a record of all nests found each breeding season. In the "Sooty albatross.xls" file record the date and route followed for all trips you make onto the base during the sooty albatross breeding season (September through May). Note any nests with apparently incubating birds, loafing birds, or chicks. Include a description of where the nest(s) were located. If you have a GPS location of the viewpoint for seeing the nest, or the nest itself, record this. If you didn't see any nests record this as well. Negative searches are as important as positive searches if you are trying to monitor population changes.

Since the Hottentot Yellow-nosed study area is visited regularly, make sure that several times during incubation, and several times during chick rearing, you walk the entire length of both Hottentot Gulch and Caves Gulch to look for nests.

Make a sketch map showing where the nests are. The more detailed the map is (i.e. showing all side branches of gulches and gullies, as well as corners, etc) the more likely it is that other people can follow it.

What you need:

Binoculars
Notebook and pencils
GPS

Storing the data:

After each trip onto the mountain, record your findings (or lack of!) on the "Sooty albatross" spreadsheet.

At the end of each season scan all the maps onto the computer and save them in the "Sooty albatross" folder.

Northern rockhopper penguin, *Eudyptes chrysocome moseleyi*

There are two species of rockhopper penguins found on islands across the southern oceans. Northern rockhoppers breed on the Tristan da Cunha group, Gough Island, and Amsterdam and Saint Paul Islands in the Indian Ocean. Worldwide, rockhopper penguin populations have been decreasing. On the main island of Tristan both eggs and adults were harvested in the past. This is no longer legal and has given the population a chance to recover.

Monitoring

Tristan:

There are eight rookeries on Tristan: West Jew's Point, Big Gulch, Phoenix Beach, Tripot Beach, Goat Road Gulch, Stony Beach, Stony Hill, and East End of Sandy Point. In late September, after all the eggs have been laid and before chicks hatch, visit each rookery and count all incubating birds. If there are two birds present at a nest only one bird should be counted (i.e. you are really counting active nests, not birds). Try to count all eight rookeries, but if conditions don't allow you to reach Tripot and Goat Road Gulch then the minimum six will suffice. The closer the count dates are from year to year, the more comparable the data. If your incubation count is late, and some chicks are present, make sure you count incubating adults and chicks separately.

At one or two rookeries (try to choose the same ones year after year), find a spot close to the water where there is good penguin traffic. You shouldn't be in the colony itself as we don't want to cause unnecessary disturbance, but the aim is to catch breeding birds that are leaving or returning to the colony. Try to collect feathers from 30 different birds. Catch one at a time and as one person holds it, the other can pluck 6 feathers. The best way to catch them is to grab them around the back of the neck. Don't lift them off the ground, but you can hold them, belly down, on the ground while the other person plucks. Try to pluck the feathers from different areas (lower back, upper back, sides). Put the feathers in a small ziplock bag. Before you release the bird make use a black marker to place an "x" on its belly. Put feathers from different birds in different bags. Put a label in each bag. Make sure you fill in the date and the location (using a pencil) that you caught the bird. Try to keep the feathers in a dry place and send them to Peter Ryan in Cape Town as soon as you can.

In December, before the chicks fledge, return to Sandy Point and Stony Hill and count all the chicks. If possible, count chicks at any other rookeries.

Nightingale:

The rockhoppers on Nightingale are difficult to monitor because they nest under the tall *Spartina* tussock. There are several rookeries reachable from the road. Each of these should be mapped using a GPS. During incubation (September to October) walk along the boundary of the rookeries and mark a waypoint every 5m or so. If there is a bend try to mark enough points so that when they're plotted on a map it will show up. Make sure that while you are mapping you have good satellite reception (wait for the accuracy to be 5m or less if possible; sometimes you may have to hold the GPS above your head). If the accuracy for any point is greater than 5m make a

note in your fieldbook, and record the waypoint(s) and the accuracy. In your notebook record which waypoints belong to each colony.

We'd also like to collect feathers from adults on Nightingale. Again, find a good spot where there is constant traffic of birds going to and leaving a colony. Somewhere along the West Road, or on any of the paths going up from the landing, works well. Follow the instructions outlined above, making sure to put the correct labels in the bags.

What you need:

Tally whackers (counting clickers)
 GPS
 Small ziplock bags
 Feather labels
 Black permanent marker
 Notebook and pencils

Storing the data:

Enter the count data from the Tristan rookeries into the “penguin counts” spreadsheet.

Download the GPS waypoints for the Nightingale rookeries, and save into a csv file. Make sure to distinguish the different colonies by adding a column which records which colony each waypoint is for.

Burrowing Petrels

Thirteen species of burrowing petrels are known to have bred on Tristan in the past. Only a few of these species still likely breed here, and their present populations are just a remnant of those found historically.

Common name	Tristan name	Scientific name	Still breeding on Tristan?
Great-winged petrel	black haglet	<i>Pterodroma macroptera</i>	Yes?
Atlantic petrel	white-breasted black haglet	<i>Pterodroma incerta</i>	Yes?
Grey petrel	pediunker	<i>Procellari cinerea</i>	Yes?
Kerguelen petrel	blue nighthawk	<i>Lugensa brevirostris</i>	No?
Broad-billed prion	nightbird	<i>Pachyptila vittata</i>	Yes
Soft-plumaged petrel	littlest white-breasted or whistler	<i>Pterodroma mollis</i>	Yes?
Great shearwater	petrel	<i>Puffinus gravis</i>	No?
Little shearwater	whistler or nighthawk	<i>Puffinus</i>	No?

		<i>assimilis</i>	
Sooty shearwater	blue petrel	<i>Puffinus griseus</i>	Yes?
Common diving-petrel	flying pinnamin	<i>Pelecanoides urinatrix</i>	No?
White-faced storm-petrel	skipjack	<i>Pelagodroma marina</i>	No?
White-bellied storm-petrel	skipjack	<i>Fregetta grallaria</i>	No?
Grey-backed storm-petrel	skipjack	<i>Garrodia nereis</i>	No?

There are several known caves in which broad-billed prions breed; one up Hottentot Gulch, one in Devil's Hole, and one below Hillpiece.

The burrows on the ridge up to Devils' Hole and on Tommy's Hill probably belong to great-winged petrels and Atlantic petrels. Both of these species are winter breeders. They start returning to their burrows in March, numbers peak in April and May, and then eggs are laid in June-July.

Monitoring

Prion Caves:

The accessible prion caves (one in Hottentot Gulch, and at one at Devil's Hole) should be visited in late August to estimate the number of incubating birds. If it is possible to count from one vantage point than do so, otherwise make sure to move through the cave slowly, in a crouched position in order to minimise disturbance to the birds. Visit the caves again in October. If there are any chicks at this stage they should be counted as well as any birds that are still incubating eggs. If during the October visit there are nests which haven't failed yet (still have eggs or chicks) then another visit should be made before they reach fledging age (November-December). At this final visit, again count the number of eggs and chicks.

Tommy's Hill, Devil's Hole ridge:

Visits should be made to these burrows in late June-early July. Reach down each burrow and try to establish whether it has a bird in it. If you can reach a bird, first feel to see if it has an egg. If it does be very careful when you pull the bird out. The easiest way to remove the bird (and the safest way for the bird) is to grab the bird's beak (make sure you have both the top and bottom mandibles) and gently pull the bird out. This allows the bird to walk and there isn't the danger of hurting its legs or wings. Once you pull the bird out identify what species it is and then return the bird to its burrow (if you put it in the burrow head first it'll find its way back to the nest.) All burrows that are found should be marked with either a piece of flagging tape on a *Phylica* tree (if one is within 1m), or use a piece of wire stuck into the ground near the entrance. Make sure that inactive, and empty or unknown content burrows are marked. Give each burrow a unique number.

Check all the burrows again in September (even those where you couldn't reach the end, and those that were empty), and November.

In your notebook record the nest number and contents for every burrow. Make notes of any eggshell (and try to determine if they're new or old), feathers (record colour), bones, and rat droppings. Also record if there are cobwebs in the entrance, and if there's fresh digging on the burrow floor. If you're unsure of a bird's identity, take a photos showing its head and breast. Sometimes the birds may respond to hearing a recording of their call played down the burrow entrance. If possible, play the Atlantic petrel call and the Great-winged petrel call down each burrow and record in your notebook if there was any response to either. Do this for all burrows.

Hottentot Gulch:

There are a few burrows near the road up to Hottentot Gulch, but there are probably more scattered around closer to the edge of the gulch. When you make visits to the yellow-nosed albatross study area in March and April try to check the burrow contents in these burrows. Remember to mark each burrow with some sort of tag or pole, and number them. Follow the instructions for Tommy's Hill and Devil's Hole for the rest of the monitoring.

When you have time, search all accessible areas above the settlement plain for burrows. Make sure you record all searches, even those where no burrows were found. Try to get a GPS location for all areas with burrows. Record the approximate number of burrows in the area, and measure the height and width of the burrow entrances (if they're all approximately the same size you can just measure a few).

What you need:

Notebook and pencil
Identification guide
Digital camera
GPS
Wing rule, or tape measure
Flagging tape
Short lengths of wire (30-50cm)
Metal or plastic tags (or duct tape if tags aren't available)
Permanent marker
Tape player and recording of Atlantic petrel and great-winged petrel
Small ziplock bags

Storing the data:

Enter the data for Tommy's Hill, Devil's Hole, and Hottentot Gulch on the "Great-winged and Atlantic petrel" workbook (each site has its own worksheet).
Enter the prion cave data into the "Broad-billed prion" workbook.
Burrow search results are entered into another workbook called "Burrow searches"

Timing of nesting for different species (Richardson, 1984):

Great-winged petrel:

Peak activity (birds attending the colonies to prepare their burrows) from April to last week in May; arrive mid-March; pre-laying exodus end of May-beginning of June; peak laying second week of June; hatching beginning of August; fledging second week of November.

Atlantic petrel:

Arrive mid-March; peak laying first week in July; hatching beginning of September; fledging mid-December?

Broad-billed prion:

Egg laying second half of August; hatching beginning of October; fledging December.

Grey petrel:

Arrive in late Feb; lay March and April; hatch June and July; fledge September and October.

Tristan Thrush *Nesocichla eremita*

Although the Tristan thrush is still common on Nightingale and Inaccessible Islands, on Tristan the population is thinly scattered, mostly on the base. There isn't enough time for the conservation officer to carry out detailed monitoring of the starchies, but it is still useful to keep a record of when and where they are seen.

Monitoring

Keep a record of all starchies seen, when possible. Record the date, location, a GPS position if you have one, and the number of birds seen. If you see a bird being fed, or any other interesting behaviour note this down too. There are only a few ringed birds, but if you see one make sure you record their rings (record the left leg first, and the colours are read from top to bottom—eg metal, white/blue= metal on the left leg, white over blue on the right leg).

How to store the data:

Store the data in the “Tristan Thrush” workbook.

Seals

Two types of seals breed in the Tristan da Cunha group: Subantarctic fur seals, and the Southern elephant seal. The elephant seal no longer breeds on any of the northern islands, but occasionally hauls out on the beaches. Fur seals still breed on all of the islands, and the populations appear to still be growing after a substantial decline due to sealing in the 17th-18th centuries.

On Tristan there is only one main furseal rookery, at Cave Point.

Monitoring

Sometime between late December and the middle of January count all new pups at Cave Point. The new season's pups will be small and black and may be found with their mother. Make sure to look under boulders as they may try to hide. If an elephant seal is seen hauled out on any beach at any time of year make note of this.

If you see any seals with plastic around their necks or torso, make note of this.

What you need:

Tally whacker (counting clickers)
Notebook and pencils

Storing the data:

Enter the fur seal pup counts and the date counted in the "Seal" workbook, on the "fur seal" worksheet.

Elephant seal sightings should be entered on the "elephant seal" worksheet in the "Seal" workbook.

Notes about seals with plastic around them should be entered on the notes sheet.



The St. Helena Government Gazette

EXTRAORDINARY

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LEGISLATION

The following Ordinance was enacted on 3 February 2006.

The Conservation of Native Organisms and Natural Habitats
(Tristan da Cunha) Ordinance 2006. Price £1.95p.

G A Francis
Acting Chief Secretary

The Castle, St Helena
3 February 2006

ETHEL YON
Acting Governor.

TRISTAN DA CUNHA



No. 1 of 2006

Enacted3rd February, 2006.
Date of CommencementOn Publication.
Published in the Gazette3rd February, 2006.

AN ORDINANCE

**to make provision for the conservation of the native organisms and
natural habitats of Tristan da Cunha**

Enacted by the Acting Governor of St.Helena and its Dependencies.

Short title

1. This ordinance may be cited as the Conservation of Native Organisms and Natural Habitats (Tristan da Cunha) Ordinance 2006.

Interpretation

2. (1) in the Ordinance, unless the context otherwise requires:

"Administrator in Council" means the Administrator acting after consultation with the Island Council;

"animal" means any kind of animate organism except human beings, microbes and bacteria and includes any spawn, egg, chick or dependent young of an animal including of birds and every stage of development of an animal including birds;

“**Fishing Licence**” means a licence issued under the provisions of the Fishery Limits (Licensing of Fishing) (Tristan da Cunha) Order;

"**Island Council**" means the Island Council of Tristan da Cunha;

“**Main Island**” means the Island of Tristan da Cunha;

"**native organism**" means any organism as defined in this section that is known to be or thought to be native to Tristan da Cunha, and includes any non-breeding and migratory organism whose presence in Tristan da Cunha has resulted from natural processes of dispersal of the species to which the organism belongs;

"**native animal**" means any animal (as defined in this section) that is known to be or thought to be native to Tristan da Cunha, and includes any non-breeding and migratory animate organism that visits Tristan da Cunha;

"**native plant**" means any plant (as defined in this section) that is known to be or thought to be native to Tristan da Cunha;

"**natural habitat**" means any land or sea area which has not been significantly altered by human activity as a result of residential, agricultural or horticultural practices, construction of buildings, roads, gardens, enclosures or any other structures or amenities for human use;

"**organism**" means any living thing or part thereof, whether animal or plant as defined in this section;

“**permit**” means a permit issued in accordance with section 6(1) of this ordinance;

"**plant**" means any kind of vegetation or any part thereof, and without prejudice to the generality of the foregoing, includes algae, fungi, lichens, liverworts; mosses, grasses, forbs, bushes, shrubs and trees and seeds and spores and every other stage in the growth cycle of a plant;

"Resident of Tristan da Cunha" means a person born in Tristan da Cunha, a spouse of any such person and any person who has lived on the Main Island of Tristan da Cunha for a period of at least one year immediately preceding the date of the event at issue or, as the case may be, the act or omission of which complaint is made, but not including in that period any period during which residence was authorised by a permit issued under the Entry Control (Tristan da Cunha) Ordinance;

"territorial waters" means a zone having for its inner boundary the low water line on the coast of the land area of Tristan da Cunha or any part thereof or any other baseline from which the territorial waters are measured and for its seaward boundary a line each point on which is twelve nautical miles from the nearest point on the aforesaid inner boundary and includes air space above that zone as well as the seabed and subsoil thereof;

"Tristan da Cunha" means the Main Island of Tristan da Cunha, Gough Island, Inaccessible Island, Nightingale Island, Middle Island, Stoltenhoff Island and the islets belonging to any of these islands.

(2) In this Ordinance any reference to a land area includes the area of the territorial waters surrounding that land area.

Protection of natural habitat

3. (1) No person shall willfully within Tristan da Cunha except with a permit-

- (a) set fire to any native plant growing in natural habitat;
- (b) spread, discharge or dump any noxious material except within a building or in a place approved by the Administrator for the disposal of such material;
- (c) spread by spray or by any other means any insecticide, herbicide or any other type of pesticide except within a building, tent or garden or areas used for agricultural or horticultural purposes and except within the Settlement of Edinburgh in the Main Island for public health purposes;

- (d) engage in any action causing disruption of the soil other than soil in a garden, enclosed area or areas used for residential, agricultural or horticultural purposes;
- (e) import any kind of organism not native to Tristan da Cunha;
- (f) liberate, disseminate or allow to escape into natural habitat or plant any kind of organism not native to Tristan da Cunha except in a garden or enclosed land or in areas used for residential, agricultural or horticultural purposes;

(2) Notwithstanding subsection (1)(e), a Resident of Tristan da Cunha may import without the prior need of obtaining a permit such agricultural and horticultural plants and domestic animals as may be approved for import from time to time by the Administrator.

(3) A person may not export from Tristan da Cunha a native organism, whether living or dead, or any parts or products thereof, except under the authority of a permit or a fishing licence and in accordance with its conditions.

(4) Notwithstanding subsection (3), a Resident of Tristan da Cunha may, without the prior need of obtaining a permit, export handicrafts and curios manufactured from eggs of those species of birds that are listed in the Schedule to this Ordinance and from plants that have been collected in accordance with this Ordinance.

(5) Notwithstanding section 6, the Administrator has no power to issue a permit in terms of this Ordinance for the purpose of subsection (3) unless-

- (a) the Island Council has approved the issue of the permit; and
- (b) the Administrator has been satisfied that the native organism, or any part or product thereof, is being exported solely for scientific and/or conservation purposes, or for commercial purposes in terms of a Fishing Licence.

(6) No person shall within Gough Island, Inaccessible Island or in any area in the Main Island, declared to be a nature reserve under section 5 of this Ordinance, except with a permit and in accordance with the terms thereof, construct any house, hut, shed, jetty, road, landing strip, runway or erect any mast, pole, aerial, beacon or any other construction or installation or undertake any agricultural or horticultural activity.

Protection of native organisms

4. (1) All native organisms within Tristan Da Cunha are hereby declared to be protected species and no person shall, except with a permit, or a Fishing Licence, and in accordance with the terms thereof, willfully kill, capture, molest, disturb, hold in captivity, destroy, cut down, uproot, remove or collect for any purpose any native organism.

(2) Notwithstanding subsection (1), a Resident of Tristan da Cunha may, without the need for the prior issuing of a permit-

- (a) engage in fishing for domestic consumption within Tristan da Cunha;
- (b) kill, destroy, cut down, uproot or remove any native plant found growing in a garden, enclosed land or in residential, agricultural and horticultural areas on the Main Island;
- (c) on Nightingale, Middle and Stoltenhoff Islands and on the Main Island, not within a nature reserve, pick, gather or pluck parts, including fruits and seeds, of native plants for domestic purposes and for the purpose of producing handicrafts and curios, including the cutting of timber from *Phylica arborea* trees, without willfully uprooting, killing or destroying such plants;
- (c) on Nightingale, Middle and Stoltenhoff Islands collect for domestic purposes eggs and chicks of birds and for agricultural and horticultural purposes guano of birds of those species that are listed in the Schedule to this Ordinance;

- (e) on the Main Island kill or otherwise disturb the introduced Gough Moorhen *Gallinula comeri*, and kill or otherwise disturb free-flying Sub Antarctic or Tristan Skuas *Catharacta antarctica hamiltoni* which are known to be, or are reasonably believed to be, killing or attacking domestic animals, including sheep and poultry.

(3) No person shall willfully destroy, damage or interfere with the breeding sites, moulting sites and resting places of any native animal, including their nests and burrows, whether such sites and places are occupied or not by such animals at the time of such destruction, disturbance or interference,

Provided however that breeding and moulting sites of Great Shearwaters *Puffinus gravis* and Northern Rockhopper Penguins *Eudyptes chrysocome moseleyi* may be entered upon on Nightingale, Middle and Stoltenhoff Islands by Residents of Tristan da Cunha for the purposes of collecting eggs and chicks of Great Shearwaters and eggs and guano of Northern Rockhopper Penguins.

(4) No person shall willfully transport any native organism between islands and islets within Tristan da Cunha, except that on Nightingale, Middle and Stoltenhoff Islands those species of birds that are listed in the Schedule to this Ordinance and timber cut from *Phyllica arborea* trees for domestic purposes may be transported to the Main Island.

(5) No person may release on any island or islet live specimens of any native organism that was not originally derived from that island or islet.

Declaration of nature reserves

5. (1) Gough and Inaccessible Islands and their surrounding islets and territorial waters, which together make up the Gough and Inaccessible Islands World Heritage Site, and all breeding colonies of the Northern Rockhopper Penguin on the Main Island are hereby declared to be Nature Reserves.

(2) No person other than a Resident of Tristan da Cunha may enter a nature reserve without the prior issuing of a permit, unless a vessel not making a lawful right of passage makes a *force majeure* entry to a nature reserve when its crew must report such entry and any effects thereof in terms of this Ordinance as soon as is practicable to the Administrator.

(3) All activities conducted within nature reserves shall be carried out following the regulations, restrictions, requirements and guidelines of any management plan or equivalent document adopted by the Administrator in Council and currently in force for any nature reserve.

(4) A Resident of Tristan da Cunha may without the need for the issue of a permit undertake fishing for domestic consumption within a nature reserve, and gather and remove from a nature reserve driftwood and other jetsam found on the shoreline of the nature reserve.

(5) Notwithstanding subsection (2), a person, not being a Resident of Tristan da Cunha, may only enter the territorial waters of a nature reserve for a purpose authorised by a Fishing License.

(6) The Administrator in Council may from time to time declare any area to be a nature reserve in Tristan da Cunha.

(7) Notice of any declaration proposed under subsection (6) shall be posted publicly in such place in the Settlement of Edinburgh as the Administrator may direct.

(8) Any Resident of Tristan da Cunha who objects to a proposed declaration shall be entitled, within one calendar month of the posting of a Notice under subsection (7), to give notice in writing addressed to the Administrator and delivered to his office that he or she objects to the proposed declaration giving reasons for his or her objection.

(9) The Administrator in Council shall as soon as is practicable consider any objection under subsection (8) and, taking into account the nature of the objection, shall decide whether the proposed declaration shall or shall not be made. If it is decided that the declaration shall be made, it shall come into force one calendar month after the date on which the decision was made.

Permits

6. (1) The Administrator in Council may issue a permit in writing to authorise a person named in the permit to do anything forbidden by this Ordinance, but only if there is or appears to be no other satisfactory course of action and only if the issuing of a permit is consistent with the Agreement on the Conservation of Albatrosses and Petrels, including Article III (General Conservation Measures) and any future amendments to that Agreement.

(2) A person authorised by a permit issued under subsection (1) must inform the Administrator in writing from time to time, but not later than one month after the expiry of the permit, of anything that has been done under the permit including the numbers of each species of native organisms killed, captured or collected.

Records

7. Written records shall be kept by the Administrator or under his direction of the following-

- (a) all permits granted including particulars of the period and conditions thereof;
- (b) all activities conducted; and
- (c) the numbers of each species of native organism taken under permits issued under the provisions of Section 6 of this Ordinance,

and such records shall be made available for inspection by any member of the Island Council.

Possession of organisms

8. Any person who without a permit knowingly-

- (a) has in his or her possession any organism which under section 3 may not be imported, liberated or disseminated; or
- (b) has in his possession any native organism killed, captured or collected in contravention of this Ordinance,

shall be guilty of an offence and the organism or native organism shall be disposed of as the Administrator may direct.

Offences and penalties

9. (1) A person commits an offence if he contravenes or attempts to contravene any of the provisions of this Ordinance or does not give any information required by the Ordinance.

(2) A person guilty of an offence under this section is liable-

- (a) in the case of a first offence, to a fine not exceeding £1000; and
- (b) in the case of a second or subsequent offence, to a fine not exceeding £5000.

Forfeiture of native organisms

10. Where any person has been convicted of an offence under section 9-

- (a) any organism or product thereof which has been the subject of such conviction shall be forfeited to the Administrator and the Court may, in addition to any penalty that may be imposed, order any firearm, machine, instrument, trap, net, apparatus, article, material or thing which has been used in the commission or concealment of the offence to be forfeited also to the Administrator;
- (b) any organism that has been forfeited to the Administrator under this section, if native to Tristan da Cunha and capable of release or replanting, shall be released, replaced or replanted on the island or islet of its collection and in its appropriate habitat whenever practicable;
- (c) any organism that has been forfeited to the Administrator under this section -

- (i) if not native to Tristan da Cunha; or
- (ii) of a kind the import of which is contrary to section 3(2); or
- (iii) of which release or replacement would be impracticable; or
- (iv) if dead,

shall be disposed of as directed by the Administrator and, if such organism or thing as referred to in this section is sold on removal from Tristan da Cunha, the proceeds thereof shall be applied to the benefits of and accrue to the conservation funds of Tristan da Cunha.

Enforcement

11. (1) The provisions of this Ordinance shall be enforced by conservation officers, and for that purpose a conservation officer shall have the powers set out in section 12.

(2) The following persons shall be conservation officers, that is to say, every officer appointed in that behalf by the Administrator, and every member of the Tristan da Cunha Police Force.

Powers of Conservation Officers

12. A Conservation Officer shall have and may exercise the following powers-

- (a) he or she may arrest without warrant or other process any person whom he or she has reasonable grounds to suspect of having committed an offence under this Ordinance;
- (b) he or she may seize and detain, pending its production in Court, any organism or thing in respect of which he or she has reasonable cause to suspect-
 - (i) that an offence under this Ordinance has been committed; or

- (ii) may be required for evidence in proceedings in respect of an offence; or
 - (iii) may have been used in connection with the commission or concealment of an offence;
- (c) for the purpose of exercising his or her powers under this section, he or she may go aboard any vessel within the territorial waters of Tristan da Cunha and make such search thereof and such inquiries of any person therein as he or she deems necessary to ascertain whether any offence under this Ordinance has been committed and to establish any fact relating thereto;
- (d) if he or she suspects that there is on a vessel within the territorial waters of Tristan da Cunha any person whom he or she reasonably suspects of having committed an offence under this Ordinance, he or she may board that vessel and may bring that person before a competent Court and may detain him or her until the alleged offence has been adjudicated upon;
- (e) if he or she reasonably suspects that any vessel which is within the territorial waters of Tristan da Cunha has been used in the commission of an offence under this Ordinance, he or she may board the vessel and may require the crew thereof to bring the vessel to the nearest or most convenient port and the Conservation Officer may detain the vessel and crew until such suspected offence has been adjudicated upon by a competent Court.

Protection of Conservation Officer

13. No action shall lie against a Conservation Officer in respect of any act done or omitted to be done by him or her in the exercise or purported exercise of his or her powers under this Ordinance unless it is proved that he or she acted in bad faith.

Obstruction of Conservation Officer

14. Any person who-

- (a) obstructs a Conservation Officer acting in the exercise of his or her powers under this Ordinance; or
- (b) refuses or neglects to comply with any requisition or direction lawfully made or given by a Conservation Officer; or
- (c) refuses or neglects to answer any question lawfully asked by a Conservation Officer under this Ordinance,

shall be guilty of an offence and liable to a fine not exceeding £500 or to imprisonment for a term not exceeding three months or to both such fine and imprisonment.

Venue

15. For all purposes of and incidental to the trial and punishment of any person in respect of an offence under this Ordinance and of proceedings and matters preliminary or incidental to or consequential in his or her trial or punishment and for all purposes of and incidental to the jurisdiction of any Court or of any member of the Police Force of Tristan da Cunha or Conservation Officer with reference to such offence, the offence shall be deemed to have been committed either in the place in which it was actually committed or in any place in which the offender may for the time being be found.

Repeals

20. The Conservation (Tristan da Cunha) Ordinance is repealed.

SCHEDULE

**SPECIES AND PRODUCTS OF SPECIES OF NATIVE BIRDS PERMITTED
TO BE TAKEN BY RESIDENTS OF TRISTAN DA CUNHA ON
NIGHTINGALE, MIDDLE AND STOLTENHOFF ISLANDS WITHOUT A
PERMIT**

Eggs and chicks of Great Shearwater *Puffinus gravis*

Eggs and guano of Northern Rockhopper Penguin *Eudyptes chrysocome
moseleyi*

Given under the hand of the Acting Governor and the Public Seal of St
Helena at the Castle, Jamestown, this 3rd day of February 2006.

G A Francis
Acting Chief secretary